



PROJECT ID: PV181HSA2

THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

30-30 THOMSON AVENUE
LONG ISLAND CITY, NEW YORK 11101-3045
TELEPHONE (718) 391-1000
WEBSITE www.nyc.gov/buildnyc

LAW

VOLUME 1 OF 3

BID BOOKLET

FOR FURNISHING ALL LABOR AND MATERIALS
NECESSARY AND REQUIRED FOR:

Harlem School of the Arts, Phase II Building Renovations

LOCATION:
BOROUGH:
CITY OF NEW YORK

645 St. Nicholas Avenue
Manhattan 10031

CONTRACT NO. 1

GENERAL CONSTRUCTION

DCA

Greenman-Pedersen, Inc.



Date: May 27, 2015

5-188





June 27, 2016

CERTIFIED MAIL - RETURN RECEIPT REQUEST

A Aleem Construction Inc.
1629 Park Avenue, Ste 1B
New York, NY 10029

RE: FMS ID: PV181HSA2
E-PIN: 85015B0170001
DDC PIN: 8502015PV0018C
HARLEM SCHOOL OF THE ARTS, PHASE II
BUILDING RENOVATIONS--BOROUGH OF
MANHATTAN
NOTICE OF AWARD

Dear Contractor:

You are hereby awarded the above referenced contract based upon your bid in the amount of \$2,949,964.00 submitted at the bid opening on November 18, 2015. Within ten (10) days of your receipt of this notice of award, you are required to take the actions set forth in Paragraphs (1) through (3) below. For your convenience, attached please find a copy of Schedule A of the General Conditions to the Contract, which sets forth the types and amounts of insurance coverage required for this contract.

- (1) Execute four copies of the Agreement in the Contracts Unit, 30-30 Thomson Avenue, 1st Floor, Long Island City, New York (IDCNY Building). A Commissioner of Deeds will be available to witness and notarize your signature. The Agreement must be signed by an officer of the corporation or a partner of the firm.
- (2) Submit to the Contracts Unit four properly executed performance and payment bonds. If required for this contract, copies of performance and payment bonds are attached.
- (3) Submit to the Contracts Unit the following insurance documentation: (a) original certificate of insurance for general liability in the amount required by Schedule A, and (b) original certificates of insurance or other proof of coverage for workers' compensation and disability benefits, as required by New York State Law. The insurance documentation specified in this paragraph is required for registration of the contract with the Comptroller's Office.



Department of
Design and
Construction

On or before the contract commencement date, you are required to submit all other certificates of insurance and/or policies in the types and amounts required by Schedule A. Such certificates of Insurance and/or policies must be submitted to the Agency Chief Contracting Office, Attention: Risk Manager, Fourth Floor at the above indicated department address.

Your attention is directed to the section of the Information for Bidders entitled "Failure to Execute Contract". As indicated in this section, in the event you fail to execute the contract and furnish the required bonds within the (10) days of your receipt of this notice of award, your bid security will be retained by the City and you will be liable for the difference between your bid price and the price for which the contract is subsequently awarded, less the amount of the bid security retained.

Sincerely,

A handwritten signature in black ink that reads "Lorraine Holley". The signature is written in a cursive, flowing style.

Lorraine Holley

#2

**BID FORM
THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS**

**BID FOR FURNISHING ALL LABOR AND
MATERIAL NECESSARY AND REQUIRED FOR:**

PROJECT ID: PV181HSA2

**Harlem School of the Arts, Phase II Building Renovations
645 St. Nicholas Avenue
Manhattan 10031**

Name of Bidder: A. Aleem Construction Inc.

Date of Bid Opening: November 18th, 2015

Bidder is: (Check one, whichever applies) Individual () Partnership () Corporation (X)

Place of Business of Bidder: 1629 Park Ave, Ste 1B, New York, NY 10029

Bidder's Telephone Number: (212) 534-5500 Bidder's Fax Number: (212) 534-5755

Bidder's Email Address: Abulaleem@aaleemconstruction.com

Residence of Bidder (If Individual): _____

If Bidder is a Partnership, fill in the following blanks:

Names of Partners

Residence of Partners

_____	_____
_____	_____
_____	_____

If Bidder is a Corporation, fill in the following blanks:

Organized under the laws of the State of New York

Name and Home Address of President: Mervyn Frank
134-23 241st Street, Rosedale, NY 11422

Name and Home Address of Secretary: _____

Name and Home Address of Treasurer: _____

BID FORM

PROJECT ID: PV181HSA2

TOTAL BID PRICE: In the space provided below, the Bidder shall indicate the total bid price in figures.

- A. LUMP SUM PRICE - Total price for all labor and material for all required work, excluding item (B) set forth below. Total Price shall include all costs and expenses, i.e. labor, material overhead and profit for all the Work, described and shown in the drawings and specifications.

Total Price For Labor	+	Total Price for Material Sold and Delivered	Total Price for Item A=
\$ _____		\$ _____	\$ <u>2,934,964</u>

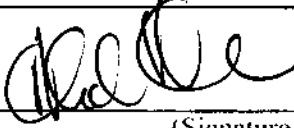
- B. ALLOWANCE for Incidental Asbestos Abatement (Section 028013 of the Specifications) \$15,000.00

TOTAL BID PRICE (Add A + B)
(a/k/a BID PROPOSAL.) \$ \$2,949,964
BB 11/18/15

BIDDER'S SIGNATURE AND AFFIDAVIT

* **SUBCONTRACTOR IDENTIFICATION:** You MUST complete and submit the form entitled "Bidder's Identification of Subcontractors" (page 19) at the time you submit your bid. You must submit this form in a separate, sealed envelope (BID ENVELOPE #2). In the event an award of contract is not made to the Bidder, the Bidder hereby authorizes the Agency to shred the form entitled "Bidder's Identification of Subcontractors". Yes No

Bidder: A. Aleem Construction Inc.

By:  _____
(Signature of Partner or corporate officer)

 _____

Attest: _____ Secretary of Corporate Bidder
(Corporate Seal)

Affidavit on the following page should be subscribed and sworn to before a Notary Public

BID FORM (TO BE NOTARIZED)

AFFIDAVIT WHERE BIDDERS IS AN INDIVIDUAL

STATE OF NEW YORK, COUNTY OF _____ ss:

_____ being duly sworn says:
I am the person described in and who executed the foregoing bid, and the several matters therein stated are in all respects true.

(Signature of the person who signed the Bid)

Subscribed and sworn to before me this
_____ day of _____

Notary Public

AFFIDAVIT WHERE BIDDERS IS A PARTNERSHIP

STATE OF NEW YORK, COUNTY OF _____ ss:

_____ being duly sworn says:
I am a member of _____ the firm described in and which executed the foregoing bid,
subscribed the name of the firm thereto on behalf of the firm, and the several matters therein stated are in all respects true.

(Signature of Partner who signed the Bid)

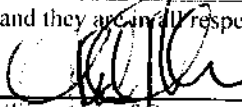
Subscribed and sworn to before me this
_____ day of _____

Notary Public

AFFIDAVIT WHERE BIDDERS IS A CORPORATION

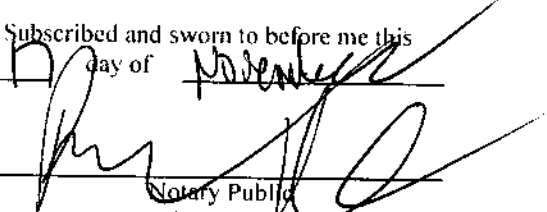
STATE OF NEW YORK, COUNTY OF _____ ss:

Mervyn Frank being duly sworn says:
I am the President of the above named corporation whose name is subscribed to and which executed
the foregoing bid. I reside at 134-23 241st Street, Rosedale, NY 11422
I have knowledge of the several matters therein stated, and they are in all respects true.

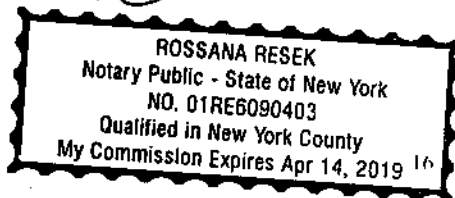


(Signature of Corporate Officer who signed the Bid)

Subscribed and sworn to before me this
_____ day of _____



Notary Public



AFFIRMATION

The undersigned bidder affirms and declares that said bidder is not in arrears to the City of New York upon debt, contract or taxes and is not a defaulter, as surety or otherwise, upon obligation to the City of New York, and has not been declared not responsible, or disqualified, by any agency of the City of New York, nor is there any proceeding pending relating to the responsibility or qualification of the bidder to receive public contracts except None

(If none, the bidder shall insert the word "None" in the space provided above.)

Full Name of Bidder: A. Aleem Construction Inc.

Address: 1629 Park Ave, Ste 1B

City: New York

State: NY

Zip Code: 10029

CHECK ONE BOX AND INCLUDE APPROPRIATE NUMBER:


A - Individual or Sole Proprietorship *
SOCIAL SECURITY NUMBER

B - Partnership, Joint Venture or other unincorporated organization
EMPLOYER IDENTIFICATION NUMBER

C - Corporation
EMPLOYER IDENTIFICATION NUMBER

113091138

By: _____

Signature: 

Title: President

If a corporation, place seal here

This affirmation must be signed by an officer or duly authorized representative.

* Under the Federal Privacy Act the furnishing of Social Security Numbers by bidders on City contracts is voluntary. Failure to provide a Social Security Number will not result in a bidder's disqualification. Social Security Numbers will be used to identify bidders, proposers or vendors to ensure their compliance with laws, to assist the City in enforcement of laws, as well as to provide the City a means of identifying of businesses which seek City contracts.

Qualification Form

Project ID: PV1811ISA2

List previous projects completed to meet the special experience requirements for this contract. Please photocopy this form for submission of all required projects.

Name of Contractor: A. Aleem Construction Inc.

Name of Project: Ennis Francis II

Location of Project: 225 W 123rd St, New York, Ny

Owner or Owner's representative (Architect or Engineer) who is familiar with the work performed:

Name: Abyssinian Development Corp. (James Howard)

Title: Senior VP of Real Estate Phone Number: (646) 442-6570

Brief description of work completed: New Construction of a new 8-Story 60 Unit affordable housing project with 37 underground parking spaces

Was the work performed as a prime or a subcontractor: Prime

Amount of Contract: \$19.3 Million

Date of Completion: June 2015

Name of Contractor: A. Aleem Construction Inc.

Name of Project: 149th St Cluster

Location of Project: 208,236-238 W 149th St, New York, NY

Owner or Owner's representative (Architect or Engineer) who is familiar with the work performed:

Name: HCCI (Jelain Hendrickson)

Title: Owners Representative Phone Number: (212) 283-1377

Brief description of work completed: Gut rehabilitation of a cluster of existing city owned apartment buildings for low and medium income residents totaling 78 units.

Was the work performed as a prime or a subcontractor: Prime

Amount of Contract: \$12.2 Million

Date of Completion: December 2012

Qualification Form

Project ID: PV181HSA2

List previous projects completed to meet the special experience requirements for this contract. Please photocopy this form for submission of all required projects.

Name of Contractor: A. Aleem Construction Inc.

Name of Project: 132nd St Cluster

Location of Project: _____

Owner or Owner's representative (Architect or Engineer) who is familiar with the work performed:

Name: 132nd St LLC (Francis Synmoie)

Title: Owners Representative Phone Number: (212) 987-8088

Brief description of work completed: Gut Rebalitation of City owned apartment buildings

Was the work performed as a prime or a subcontractor: Prime

Amount of Contract: \$12.2 Million

Date of Completion: July 2011

Name of Contractor: A. Aleem Construction Inc.

Name of Project: 2512 7th Ave Project

Location of Project: _____

Owner or Owner's representative (Architect or Engineer) who is familiar with the work performed:

Name: 2512 7th Avenue Housing Development Fund Corp. (Majid Mannan)

Title: Owners Representative Phone Number: (212) 662-220

Brief description of work completed: Gut Rehabilitation of City owned apartment buildings.

Was the work performed as a prime or a subcontractor: Prime

Amount of Contract: 3.2 Million

Date of Completion: July 2011

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project : Harlem School of the Arts, Phase II Building Renovations
 Location: 645 St. Nicholas Avenue, NY NY 10031
 Bidder:

DDC ID: PV181HSA2
 Sponsor Agency: DCA

CSI Number	DESCRIPTION	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
076100	Flashing and Sheet metal	1	LS	\$ 1,000.00	\$ 1,000.00	\$ 3,500.00	\$ 3,500.00	\$ 4,500.00
	Flashing and Sheet metal	13	EA	\$ 150.00	\$ 1,950.00	\$ 350.00	\$ 4,550.00	\$ 6,500.00
	Flashing and Sheet Metal (at Roof Curbs for Acoustical Pnl Sys.)							\$ 11,000.00
	Subtotal							
078400	Firestopping/ Smoke Seals	1	LS	\$ 1,500.00	\$ 1,500.00	\$ 4,000.00	\$ 4,000.00	\$ 5,500.00
	Firestopping/ Smoke Seals							\$ 5,500.00
	Subtotal							
079200	Joint Sealers	1	LS	\$ 1,500.00	\$ 1,500.00	\$ 5,000.00	\$ 5,000.00	\$ 6,500.00
	Joint Sealers	44	SF	\$ 10.00	\$ 440.00	\$ 15.00	\$ 660.00	\$ 1,100.00
	Joint Sealers (for Acoustical Panel Sys.)							\$ 7,600.00
	Subtotal							
Division 8	OPENINGS							
081102	Steel Doors and Frames							
	Interior single doors	6	EA	\$ 2,000.00	\$ 12,000.00	\$ 3,000.00	\$ 18,000.00	\$ 30,000.00
	Interior double doors	1	EA	\$ 3,000.00	\$ 3,000.00	\$ 4,000.00	\$ 4,000.00	\$ 7,000.00
	Interior frame 6'-0"x7'-0"H	1	EA	\$ 1,000.00	\$ 1,000.00	\$ 1,000.00	\$ 1,000.00	\$ 2,000.00
	Interior frame 3'-0"x7'-0"H	6	EA	\$ 500.00	\$ 3,000.00	\$ 700.00	\$ 4,200.00	\$ 7,200.00
	Roll up door	1	EA	\$ 8,000.00	\$ 8,000.00	\$ 6,000.00	\$ 6,000.00	\$ 14,000.00
	Subtotal							\$ 60,200.00
085123	Steel Windows (Included w/ 088100)							
087100	Finish Hardware	7	SET	\$ 800.00	\$ 5,600.00	\$ 500.00	\$ 3,500.00	\$ 9,100.00
	Finish Hardware							\$ 9,100.00
	Subtotal							
088100	Glass and Glazing	12	SF	\$ 100.00	\$ 1,200.00	\$ 120.00	\$ 1,440.00	\$ 2,640.00
	Glass and Glazing							\$ 2,640.00
	Subtotal							
089100	Stationary Metal Wall Louvers	3	EA	\$ 600.00	\$ 1,800.00	\$ 400.00	\$ 1,200.00	\$ 3,000.00
	Stationary Metal Wall Louvers							\$ 3,000.00
	Subtotal							
Division 9	FINISHES							
092116	Gypsum Board Assemblies							
	Gypsum Board Assemblies	935	SF	\$ 5.00	\$ 4,675.00	\$ 20.00	\$ 16,700.00	\$ 23,375.00
	(GWB partitions = 810 SF)							
	(GWB ceiling = 125 SF)							
	Subtotal							\$ 23,375.00
092214	Furring for Gypsum Board Ceilings (Included w/ 092116)							
	Furring for Gypsum Board Ceilings (Included w/ 092116)							
	Subtotal							

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CONTRACT 1 - GENERAL CONSTRUCTION

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 Bidder:

DDC ID: PV181HSA2
 Sponsor Agency: DCA

CSI Number	DESCRIPTION	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
093013	Ceramic Tile							
	Ceramic Tile	280	SF	\$ 10.00	\$ 2,800.00	\$ 40.00	\$ 11,200.00	\$ 14,000.00
	Cove Base 4 1/4x4 1/4	56	LF	\$ 8.00	\$ 448.00	\$ 25.00	\$ 1,400.00	\$ 1,848.00
	Subtotal							\$ 15,848.00
095300	Suspended Acoustical Ceiling System							
	Suspended Acoustical Ceiling System	105	SF	\$ 7.00	\$ 735.00	\$ 60.00	\$ 6,300.00	\$ 7,035.00
	Subtotal							\$ 7,035.00
096519	Resilient Flooring							
	Porcelain Floor Tiles	145	SF	\$ 10.00	\$ 1,450.00	\$ 40.00	\$ 5,800.00	\$ 7,250.00
	Subtotal							\$ 7,250.00
09 9000	Painting							
	Painting	1750	SF	\$ 1.00	\$ 1,750.00	\$ 3.00	\$ 5,250.00	\$ 7,000.00
	Subtotal							\$ 7,000.00
Division 10	SPECIALTIES							
102113	Metal Toilet Compartments							
	Metal Toilet Compartments	1	EA	\$ 2,500.00	\$ 2,500.00	\$ 1,000.00	\$ 1,000.00	\$ 3,500.00
	Subtotal							\$ 3,500.00
102813	Toilet and Bath Accessories							
	Toilet and Bath Accessories	1	LS	\$ 700.00	\$ 700.00	\$ 700.00	\$ 700.00	\$ 1,400.00
	Subtotal							\$ 1,400.00
Division 13	SPECIAL CONSTRUCTION							
134813	Acoustical Panel Systems							
	Acoustical Panels, 12" Hot Dip Galv. 3 lb/sf Fill	1525	SF	\$ 20.00	\$ 30,500.00	\$ 30.00	\$ 45,750.00	\$ 76,250.00
	Subtotal							\$ 76,250.00
Division 14	CONVEYING EQUIPMENT							
142420	Hydraulic Vertical Platform Lift							
	Platform Vertical Lift (Based on Savaria V1504, type 2), pitless 36"x54", 750 Lbs, 21" travel/ with built in control, 3" ramp	1	LS	\$ -	\$ -	\$ -	\$ -	\$ -
	Electrical Material (Cab)	1	LS	\$ -	\$ -	\$ -	\$ -	\$ -
	Subtotal							\$ 19,800.00
142423	FLOOR MATS AND FRAMES							
	Hydraulic Passenger Elevator Controller	1	LS	\$ -	\$ -	\$ -	\$ -	\$ -
	Power Unit	1	LS	\$ -	\$ -	\$ -	\$ -	\$ -
	Holeless Jack Assembly	1	LS	\$ -	\$ -	\$ -	\$ -	\$ -
	Landing/Leveling System	1	LS	\$ -	\$ -	\$ -	\$ -	\$ -
	Cab Platform	1	LS	\$ -	\$ -	\$ -	\$ -	\$ -
	Cab Enclosure	1	LS	\$ -	\$ -	\$ -	\$ -	\$ -
	Car Door Sill (2)	1	LS	\$ -	\$ -	\$ -	\$ -	\$ -
	Cab Flooring	1	LS	\$ -	\$ -	\$ -	\$ -	\$ -

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project : Harlem School of the Arts, Phase II Building Renovations
 Location: 645 St. Nicholas Avenue, NY NY 10031
 Bidder:

DDC ID: PV181HSA2
 Sponsor Agency: DCA

CSI Number	DESCRIPTION	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Guides	1	LS	\$	\$	\$	\$	\$
	Car Door Operator & Clutch (2)	1	LS	\$	\$	\$	\$	\$
	Car Door Track and Hangers (2 sets)	1	LS	\$	\$	\$	\$	\$
	Car Door Protection Infrared Beam (2)	1	LS	\$	\$	\$	\$	\$
	Car Pushbutton Station	1	LS	\$	\$	\$	\$	\$
	Car Travel Lantern (2)	1	LS	\$	\$	\$	\$	\$
	Car Position Indicator	1	LS	\$	\$	\$	\$	\$
	Emergency Communication System	1	LS	\$	\$	\$	\$	\$
	Top of Car Inspection Box	1	LS	\$	\$	\$	\$	\$
	Hall Push Buttons w/Position Indicators (3)	1	LS	\$	\$	\$	\$	\$
	Hall Door Entrances Complete (3)	1	LS	\$	\$	\$	\$	\$
	Holstway Limit Switches (Top & Bottom)	1	LS	\$	\$	\$	\$	\$
	Pit Stop Switch	1	LS	\$	\$	\$	\$	\$
	Traveling Cable	1	LS	\$	\$	\$	\$	\$
	Electrical Material (Holstway)	1	LS	\$	\$	\$	\$	\$
	Electrical Material (Motor Room)	1	LS	\$	\$	\$	\$	\$
	Electrical Material (Cab)	1	LS	\$	\$	\$	\$	\$
	Pit Steel & Buffers	1	LS	\$	\$	\$	\$	\$
	Pit Ladder	1	LS	\$	\$	\$	\$	\$
	Scavenger Pump	1	LS	\$	\$	\$	\$	\$
	Adjusting and Testing	1	LS	\$	\$	\$	\$	\$
	Miscellaneous Elevator Work	1	LS	\$	\$	\$	\$	\$
	Subtotal							\$ 230,000.00
Division 21	FIRE PROTECTION							\$ 25,000.00
211313	Sprinkler Systems							
	SPRINKLER PIPING w/S FITTINGS & HANGERS							
	1" Pipe	20	FT	5	100	30	600	\$ 700.00
	Sprinkler Heads	1	EA	38	38	90	90	\$ 128.00
	Water Flow Switch	1	EA	295	295	350	350	\$ 645.00
	Tamper Switch	1	EA	190	190	80	80	\$ 270.00
	Testing	1	EA	500	500	500	500	\$ 500.00
	MISC	1	LS	665	665	790	790	\$ 1,455.00
	Subtotal							\$ 3,698.00
Division 22	PLUMBING							
220410	Plumbing Piping							
	4" Storm Piping -No-Hub C.I. w/ Fittings & Hangers	70	LF	9	630	7	4410	\$ 5,040.00
	1/2" Copper Piping - Type L- Water	100	LF	5	500	11	1100	\$ 1,600.00
	3/4" Copper Piping - Type L- Water	150	LF	7	1050	11	1650	\$ 2,700.00
	1" Copper Piping - Type L- Water	50	LF	12	600	23	1150	\$ 1,750.00
	1-1/4" Copper Piping - Type L- Water	150	LF	14	2100	31	4650	\$ 6,750.00
	1" N. Gas - Sch. 40 W/ Fittings & Hangers	150	LF	12	1800	23	3450	\$ 5,250.00
	1-1/2" N. Gas - Sch. 40 W/ Fittings & Hangers	50	LF	17	850	37	1850	\$ 2,700.00
	2" N. Gas - Sch. 40 W/ Fittings & Hangers	20	LF	24	480	41	820	\$ 1,300.00

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DDC ID: PV181HSA2
 Sponsor Agency: DCA

CSI Number	DESCRIPTION	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	3" N. Gas - Sch. 40 W/ Fittings & Hangers	30	LF	35	1050	55	1650	\$ 2,700.00
	4" N. Gas - Sch. 40 W/ Fittings & Hangers	50	LF	43	2150	57	2850	\$ 5,000.00
	6" N. Gas - Sch. 40 W/ Fittings & Hangers	150	LF	45	6750	104	15600	\$ 22,350.00
	Plumbing Piping w/ Fittings, Hangers							
	4" C.I. Sanitary Piping - No - Hub	90	LF	9	810	31	2790	\$ 3,600.00
	4" C.I. Sanitary Piping - No - Hub	70	LF	8	560	24	1680	\$ 2,240.00
	2" C.I. Sanitary/Vent Piping - No - Hub	200	LF	4	800	19	3800	\$ 4,600.00
	1/2" Copper Piping - Type L - Water	90	LF	5	450	11	990	\$ 1,440.00
	3/4" Copper Piping - Type L - Water	80	LF	7	560	11	880	\$ 1,440.00
	1" Copper Piping - Type L - Water	70	LF	11	770	21	1470	\$ 2,240.00
	1-1/4" Copper Piping - Type L - Water	35	LF	12	420	28	980	\$ 1,400.00
	Subtotal							\$ 74,100.00
220523	Valves							
	1/2" Ball Valve	10	EA	8	80	25	250	\$ 330.00
	3/4" Ball Valve	10	EA	14	140	32	320	\$ 460.00
	1" Ball Valve	8	EA	19	152	36	288	\$ 440.00
	1-1/2" Ball Valve	2	EA	29	58	47	94	\$ 152.00
	2" Ball Valve	2	EA	38	76	56	112	\$ 188.00
	1" Plug Valve	2	EA	19	38	32	64	\$ 102.00
	Subtotal							\$ 1,672.00
220553	Pipe and Valve Identification							
	Pipe and Valve Identification	1	LS	280	280		400	\$ 680.00
220700	Piping Insulation							
	Piping Insulation	1		662	662	1500	1500	\$ 2,162.00
	Subtotal							\$ 2,162.00
220800	Cleaning and Testing							
	Cleaning and Testing	1				1000	1000	\$ 1,000.00
221429	Sump Pump Submersible							
	Elevator Sump Pump - 1/3HP , 10 GPM @ 20TDH	1	EA	655	655	759	759	\$ 1,414.00
	Subtotal							\$ 1,414.00
223301	Domestic Water Heater							
	98 Gal., 90 MBH Gas Firing, With Piping	1	EA	2650	2650	1800	1800	\$ 4,450.00
	Subtotal							\$ 4,450.00
224200	Plumbing Fixtures							

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 Location: 645 St. Nicholas Avenue, NY NY 10031
 Bidder:

DDC ID: PV181HSA2
 Sponsor Agency: DCA

CSI Number	DESCRIPTION	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Water Closets w/ Carrier, Flush Valve, Etc.	2	EA	480	960	240	480	\$ 1,440.00
	Urinals w/Carrier, Flush Valve	1	EA	350	350	210	210	\$ 560.00
	Lavatories w/ Supports, Faucet, Drain, Etc.	2	EA	370	740	260	520	\$ 890.00
	Floor Drains	1	EA	290	290	450	450	\$ 740.00
	Subtotal							\$ 3,630.00
Division 23	HVAC							
	Subtotal							\$ 1,056,000
Division 26	ELECTRICAL							
	Subtotal							\$ 173,000.00
TOTAL CONTRACT 1 - GENERAL CONSTRUCTION WORK								\$ 2,934,964.00

SAFETY QUESTIONNAIRE

The bidder must include, with its bid, all information requested on this Safety Questionnaire. Failure to provide a completed and signed Safety Questionnaire at the time of bid opening may result in disqualification of the bid as non-responsive.

1. Bidder Information:

Company Name: A. Aleem Construction Inc.

DDC Project Number: PV181HSA2

Company Size: X Ten (10) employees or less
 _____ Greater than ten (10) employees

Company has previously worked for DDC _____ YES X NO

2. Type(s) of Construction Work

TYPE OF WORK	LAST 3 YEARS	THIS PROJECT
General Building Construction	<u> X </u>	_____
Residential Building Construction	<u> X </u>	_____
Nonresidential Building Construction	<u> X </u>	_____
Heavy Construction, except building	_____	_____
Highway and Street Construction	_____	_____
Heavy Construction, except highways	_____	_____
Plumbing, Heating, HVAC	_____	_____
Painting and Paper Hanging	_____	_____
Electrical Work	_____	_____
Masonry, Stonework and Plastering	_____	_____
Carpentry and Floor Work	_____	_____
Roofing, Siding, and Sheet Metal	_____	_____
Concrete Work	_____	_____
Specialty Trade Contracting	_____	_____
Asbestos Abatement	_____	_____
Other (specify)	_____	_____
_____	_____	_____

3. Experience Modification Rate:

The Experience Modification Rate (EMR) is a rating generated by the National Council of Compensation Insurance (NCCI). This rating is used to determine the contractor's premium for worker's compensation insurance. The contractor may obtain its EMR by contacting its insurance broker or the NCCI. If the contractor cannot obtain its EMR, it must submit a written explanation as to why.

The Contractor must indicate its Intrastate and Interstate EMR for the past three years. [Note: For contractors with less than three years of experience, the EMR will be considered to be 1.00].

YEAR	INTRASTATE RATE	INTERSTATE RATE
2015		.89
2014		.87
2013		.97

If the Intrastate and/or Interstate EMR for any of the past three years is greater than 1.00, the contractor must attach, to this questionnaire, a written explanation for the rating and identify what corrective action was taken to correct the situation resulting in that rating.

4. OSHA Information:

YES NO Contractor has received a willful violation issued by OSHA or New York City Department of Buildings (NYCDOB) within the last three years.

YES NO Contractor has had an incident requiring OSHA notification within 8 hours (all work-related fatalities) or an incident requiring OSHA notification within 24 hours (all work-related inpatient hospitalizations, all amputations and all losses of an eye).

The Occupational Safety and Health Act (OSHA) of 1970 requires employers with ten or more employees, on a yearly basis to complete and maintain on file the form entitled "Log of Work-related Injuries and Illnesses". This form is commonly referred to as the OSHA 300 Log (OSHA 200 Log for 2001 and earlier).

The OSHA 300 Log must be submitted for the last three years for contractors with more than ten employees.

The Contractor must indicate the total number of hours worked by its employees, as reflected in payroll records for the past three years.

The contractor must submit the Incident Rate for Lost Time Injuries (the Incident Rate) for the past three years. The Incident Rate is calculated in accordance with the formula set forth below. For each given year, the total number of incidents is the total number of non-fatal injuries and illnesses reported on the OSHA 300 Log. The 200,000 hours represents the equivalent of 100 employees working forty hours a week, fifty weeks per year.

$$\text{Incident Rate} = \frac{\text{Total Number of Incidents} \times 200,000}{\text{Total Number of Hours Worked by Employees}}$$

YEAR	TOTAL NUMBERS OF HOURS WORKED BY EMPLOYEES	INCIDENT RATE
_____	_____	N/A
_____	_____	N/A
_____	_____	N/A

If the contractor's Incident Rate for any of the past three years is one point higher than the Incident Rate for the type of construction it performs (listed below), the contractor must attach, to this questionnaire, a written explanation for the relatively high rate.

General Building Construction	8.5
Residential Building Construction	7.0
Nonresidential Building Construction	10.2
Heavy Construction, except building	8.7
Highway and Street Construction	9.7
Heavy Construction, except highways	8.3
Plumbing, Heating, HVAC	11.3
Painting and Paper Hanging	6.9
Electrical Work	9.5
Masonry, Stonework and Plastering	10.5
Carpentry and Floor Work	12.2
Roofing, Siding, and Sheet Metal	10.3
Concrete Work	8.6
Specialty Trade Contracting	8.6

5. Safety Performance on Previous DDC Project(s)

YES NO Contractor previously audited by the DDC Office of Site Safety.
 DDC Project Number(s): N/A

YES NO Accident on previous DDC Project(s).
 DDC Project Number(s): N/A

YES NO Fatality or Life-altering Injury on DDC Project(s) within the last three years.
 [Examples of a life-altering injury include loss of limb, loss of a sense (e.g., sight, hearing), or loss of neurological function].
 DDC Project Number(s): N/A

Date: 11/17/2015

By: 
 (Signature of Owner, Partner, Corporate Officer)

Title: President

**BID BOND 1
FORM OF BID BOND**

KNOW ALL MEN BY THESE PRESENTS. That we, _____

A. Aleem Construction Co., Inc.

1629 Park Avenue, Suite 1N, New York, NY 10029

hereinafter referred to as the "Principal", and _____

Endurance American Insurance Company

750 Third Avenue, 2nd Floor, New York, NY 10017

hereinafter referred to as the "Surety" are held and firmly bound to THE CITY OF NEW YORK, hereinafter referred to as the "CITY", or to its successors and assigns in the penal sum of

Ten Percent of Amount Bid

(\$ 10%), Dollars lawful money of the United States, for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Whereas, the Principal is about to submit (or has submitted) to the City the accompanying proposal, hereby made a part hereof, to enter into a contract in writing for Harlem School of the Arts. Phase II Renovations,
Manhattan, NY - Project #PV181HSA2

NOW, THEREFORE, the conditions of this obligation are such that if the Principal shall not withdraw said Proposal without the consent of the City for a period of forty-five (45) days after the opening of bids and in the event of acceptance of the Principal's Proposal by the City, if the Principal shall:

(a) Within ten (10) days after notification by the City, execute in quadruplicate and deliver to the City all the executed counterparts of the Contract in the form set forth in the Contract Documents, in accordance with the proposal as accepted, and

(b) Furnish a performance bond and separate payment bond, as may be required by the City, for the faithful performance and proper fulfillment of such Contract, which bonds shall be satisfactory in all respects to the City and shall be executed by good and sufficient sureties, and

(c) In all respects perform the agreement created by the acceptance of said Proposal as provided in the Information for Bidders, bound herewith and made a part hereof, or if the City shall reject the aforesaid Proposal, then this obligation shall be null and void; otherwise to remain in full force and effect.

BID BOND 2

In the event that the Proposal of the Principal shall be accepted and the Contract be awarded to him the Surety hereunder agrees subject only to the payment by the Principal of the premium therefore, if requested by the City, to write the aforementioned performance and payment bonds in the form set forth in the Contract Documents.

It is expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

There shall be no liability under this bond if, in the event of the acceptance of the Principal's Proposal by the City, either a performance bond or payment bond, or both, shall not be required by the City on or before the 30th day after the date on which the City signs the Contract.

The surety, for the value received, hereby stipulates and agrees that the obligations of the Surety and its bond shall in no way be impaired or affected by any postponements of the date upon which the City will receive or open bids, or by any extensions of time within which the City may accept the Principal's Proposal, or by any waiver by the City of any of the requirements of the Information for Bidders, and the Surety hereby waives notice of any such postponements, extensions, or waivers.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers the 6th day of November, 2015.

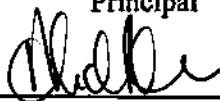
(Seal)

A. Aleem Construction Co., Inc.

(L.S.)

Principal

By:



(Seal)

Endurance American Insurance Company

Surety

By:

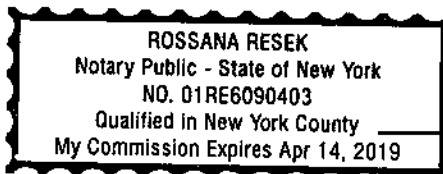
Fern Perry

Attorney-in-Fact

BID BOND 3

ACKNOWLEDGEMENT OF PRINCIPAL, IF A CORPORATION

State of New York County of _____ ss:
On this 17 day of 2015, before me personally came
Merryn Frank to me known, who, being by me duly sworn, did depose and say that he
resides at 134-23 241st Street, Rosedale, NY
that he is the President of A. Aleem Construction Co., Inc.
the corporation described in and which executed the foregoing instrument; that he knows the seal of said
corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the
directors of said corporation, and that he signed his name thereto by like order



[Signature]
Notary Public

ACKNOWLEDGEMENT OF PRINCIPAL, IF A PARTNERSHIP

State of _____ County of _____ ss:
On this _____ day of _____, before me personally appeared
_____ to me known and known to me to be one of the members of the firm of
_____ described in and who executed the foregoing instrument, and he
acknowledged to me that he executed the same as and for the act and deed of said firm.

Notary Public

ACKNOWLEDGEMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____ County of _____ ss:
On this _____ day of _____, before me personally appeared
_____ to me known and known to me to be the person described in and who
executed the foregoing instrument and acknowledged that he executed the same.

Notary Public

AFFIX ACKNOWLEDGEMENTS AND JUSTIFICATION OF SURETIES

ACKNOWLEDGMENT OF SURETY

STATE OF NEW YORK }
 } ss:
COUNTY OF NASSAU }

On November 6, 2015 before me personally came Fern Perry to me known who, being by me duly sworn, did depose and say that he/she resides at 255 Executive Drive, Plainview, New York 11803, that he/she is the Attorney-In-Fact of Endurance American Insurance Company the corporation described in and which executed the foregoing instrument; and that he/she signed his/her name thereto by order of the Board of Directors of said corporation.



Notary Public
Peter Henry
Notary Public State of NY
No. 01HE4784829
Qualified in Nassau County
Commission Expires January 31, 2018

POWER OF ATTORNEY

Know all Men by these Presents, that ENDURANCE AMERICAN INSURANCE COMPANY, a Delaware corporation (the "Corporation"), with offices at 750 Third Avenue, New York, New York 10017, has made, constituted and appointed and by these presents, does make, constitute and appoint

ROBERT FINNELL, FERN PERRY, DEBORAH L. SEVERIN, JANICE R. FISCINA, JENNIFER LAURA JOHNSTON-OGEKA, ROSANNE CALLAHAN, PETER HENRY

its true and lawful Attorney(s)-in-fact, at PLAINVIEW in the State of NY and each of them to have full power to act without the other or others, to make, execute, seal and deliver for and on its behalf bonds, undertakings or obligations in surety or co-surety with others, also to execute and deliver on its behalf renewals, extensions, agreements, waivers, consents or stipulations relating to such aforesaid bonds, undertakings or obligations provided, however, that no single bond or undertaking so made, executed and delivered shall obligate the Corporation for any portion of the penal sum thereof in excess of the sum of SEVEN MILLION FIVE HUNDRED THOUSAND Dollars (\$7,500,000.00).

Such bonds and undertakings for said purposes, when duly executed by said attorney(s)-in-fact, shall be binding upon the Corporation as fully and to the same extent as if signed by the President of the Corporation under its corporate seal attested by its Corporate Secretary.261

This appointment is made under and by authority of certain resolutions adopted by the Board of Directors of the Corporation by unanimous written consent on the 21st day of July, 2011, a copy of which appears below under the heading entitled "Certificate".

261

This Power of Attorney is signed and sealed by facsimile under and by authority of the following resolution adopted by the Board of Directors of the Corporation by unanimous written consent on the 21st day of July, 2011 and said resolution has not since been revoked, amended or repealed:

RESOLVED, that in granting powers of attorney pursuant to certain resolutions adopted by the Board of Directors of the Corporation by unanimous written consent on the 21st day of July, 2011, the signature of such directors and officers and the seal of the Corporation may be affixed to any such power of attorney or any certificate relating thereto by facsimile, and any such power of attorney or certificate bearing such facsimile signature or seal shall be valid and binding upon the Corporation in the future with respect to any bond or undertaking to which it is attached.

This Power of Attorney shall expire and all authority hereunder shall terminate without notice at 12:01 a.m. (Standard Timer where said attorney(s)-in-fact is authorized to act.) MAY 17TH, 2016.

IN WITNESS WHEREOF, the Corporation has caused these presents to be duly signed and its corporate seal to be hereunto affixed and attested this 18TH day of MAY, 2015 at New York, New York.
(Corporate Seal)

ENDURANCE AMERICAN INSURANCE COMPANY

ATTEST

Alfred N. Wright, Senior Vice President

By

Ronald Diggs, Vice President

STATE OF NEW YORK ss: MANHATTAN
COUNTY OF NEW YORK

On the 18TH day of MAY, 2015 before me personally came RONALD DIGGS to me known, who being by me duly sworn, did depose and say that (s)he resides in HELPERTOWN, PENNSYLVANIA that (s)he is a VICE PRESIDENT of ENDURANCE AMERICAN INSURANCE COMPANY, the corporation described in and which executed the above instrument; that (s)he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that (s)he signed his (her) name thereto by like order.
(Notarial Seal)

Anie Licari, Notary Public - My Commission Expires: October 29, 2015

CERTIFICATE

STATE OF NEW YORK ss: MANHATTAN
COUNTY OF NEW YORK

I, Doug Woman, the Chief Executive Officer of ENDURANCE AMERICAN INSURANCE COMPANY, a Delaware Corporation (the "Corporation"), hereby certify:

- 1. That the original power of attorney of which the foregoing is a copy was duly executed on behalf of the Corporation and has not since been revoked, amended or modified; that the undersigned has compared the foregoing copy thereof with the original power of attorney, and that the same is a true and correct copy of the original power of attorney and of the whole thereof;
- 2. The following are resolutions which were adopted by the Board of Directors of the Corporation by unanimous written consent on the 21st day of July, 2011 and said resolutions have not since been revoked, amended or modified:

"RESOLVED, that each of the individuals named below is authorized to make, execute, seal and deliver for and on behalf of the Corporation any and all bonds, undertakings or obligations in surety or co-surety with others and to execute and deliver for and on behalf of the Corporation renewals, extensions, agreements, waivers, consents or stipulations relating to such aforesaid bonds, undertakings or obligations:

ALFRED N. WRIGHT, RONALD DIGGS

And

RESOLVED FURTHER, that each of the individuals named above is authorized to appoint attorneys-in-fact for the purpose of making, executing, sealing and delivering bonds, undertakings or obligations in surety or co-surety for and on behalf of the Corporation.

- 3. The undersigned further certifies that the above resolutions are true and correct copies of the resolutions as so recorded and of the whole thereof.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the corporate seal this NOV 6 2015, 20 day of

(Corporate Seal)

Doug Woman, Chief Executive Officer of U.S. Insurance

ENDURANCE AMERICAN INSURANCE COMPANY
Balance Sheet - Statutory - Basis
December 31, 2014

Assets	
Bonds	\$ 300,479,343
Common stocks	90,239,052
Cash	28,823,471
Receivable for securities	<u>7,034,443</u>
Total cash and invested assets	426,596,309
Agents' balances or uncollected premiums	611,326,868
Reinsurance recoverable on loss and loss adjustment expense payables	188,834,551
Funds held by or deposited with reinsurers companies	12,577,282
Current federal and foreign income tax recoverable	222,552
Investment income due and accrued	1,380,223
Receivables from parent, subsidiaries and affiliates	<u>2,916,663</u>
Total admitted assets	\$ <u>1,243,856,448</u>
Liabilities	
Loss and loss adjustment expenses	\$ 204,125,794
Reinsurance payable on paid loss and loss adjustment expenses	330,820,037
Unearned premiums	78,904,134
Ceded reinsurance premiums payable	357,992,680
Provision for reinsurance	1,037,000
Payable to parent, subsidiaries and affiliates	6,457,166
Payable for securities	14,792,578
Other liabilities	<u>8,525,697</u>
Total liabilities	1,002,655,088
Capital and surplus	
Common capital stock	6,000,000
Gross paid in and contributed surplus	531,153,297
Unassigned funds (surplus)	<u>(293,951,935)</u>
Total capital and surplus	241,201,362
Total liabilities and capital and surplus	\$ <u>1,243,856,448</u>

I, Stan Gotsky, Treasurer of Endurance American Insurance Company (the "Company") do hereby certify that to the best of my knowledge and belief, the foregoing is a full and true Statutory Statement of Admitted Assets, Liabilities, Capital and Surplus of the Company as of December 31, 2014 prepared in conformity with accounting practices prescribed or permitted by the State of Delaware Department of Insurance. The foregoing statement should not be taken as a complete statement of financial condition of the Company. Such a statement is available upon request at the Company's office located at 4 Manhattanville Road, 3rd Floor, Purchase, NY 10577.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of the Company at New York, New York.


 Stan Gotsky, Treasurer

Subscribed and sworn to before me this

12th day of March, 2015

ROSE CHARLES
 Notary Public, State of New York
 No. 02118172944
 Qualified in New York County
 My Commission Expires Aug 11, 2015



Tax ID # _____

APT E-

PIN#: 85015B0170

SCHEDULE B - Part II: M/WBE Participation Plan

Part II to be completed by the bidder/proposer:

Please note: For Non-M/WBE Prime Contractors who will NOT subcontract any services and will self-perform the entire contract, you must obtain a FULL waiver by completing the Waiver Application on pages 9 and 9a and timely submitting it to the contracting agency pursuant to the Notice to Prospective Contractors. Once a FULL WAIVER is granted, it must be included with your bid or proposal and you do not have to complete or submit this form with your bid or proposal.

Section I: Prime Contractor Contact Information			
Tax ID #	<u>113091138</u>	FMS Vendor ID #	_____
Business Name	<u>A. Aleem Construction Inc.</u>	Contact Person	<u>Mervyn Frank</u>
Address	<u>1629 Park Ave, Ste 1B, New York, NY 10029</u>		
Telephone #	<u>(212) 534-5500</u>	Email	<u>Abdulaleem@aaleemconstruction.com</u>

Section II: M/WBE Utilization Goal Calculation: Check the applicable box and complete subsection.

PRIME CONTRACTOR ADOPTING AGENCY M/WBE PARTICIPATION GOALS

<input checked="" type="checkbox"/> For Prime Contractors (including Qualified Joint Ventures and M/WBE firms) adopting Agency M/WBE Participation Goals.	Total Bid/Proposal Value	Agency Total Participation Goals (Line 1, Page 6)	Calculated M/WBE Participation Amount
Calculate the total dollar value of your total bid that you agree will be awarded to M/WBE subcontractors for services and/or credited to an M/WBE prime contractor or Qualified Joint Venture. Please review the Notice to Prospective Contractors for more information on how to obtain credit for M/WBE participation.	\$ 2,934,964	X .14	= \$ 410,854.96 Line 2

PRIME CONTRACTOR OBTAINED PARTIAL WAIVER APPROVAL: ADOPTING MODIFIED M/WBE PARTICIPATION GOALS

<input type="checkbox"/> For Prime Contractors (including Qualified Joint Ventures and M/WBE firms) adopting Modified M/WBE Participation Goals.	Total Bid/Proposal Value	Adjusted Participation Goal (From Partial Waiver)	Calculated M/WBE Participation Amount
Calculate the total dollar value of your total bid that you agree will be awarded to M/WBE subcontractors for services and/or credited to an M/WBE prime contractor or Qualified Joint Venture. Please review the Notice to Prospective Contractors for more information on how to obtain credit for M/WBE participation.	\$	X	= \$ Line 3

Section III: M/WBE Utilization Plan: How Proposer/Bidder Will Fulfill M/WBE Participation Goals. Please review the Notice to Prospective Contractors for more information on how to obtain credit for M/WBE participation. Check applicable box. The Proposer or Bidder will fulfill the M/WBE Participation Goals:

As an M/WBE Prime Contractor that will self-perform and/or subcontract to other M/WBE firms a portion of the contract the value of which is at least the amount located on Lines 2 or 3 above, as applicable. The value of any work subcontracted to non-M/WBE firms will not be credited towards fulfillment of M/WBE Participation Goals. Please check all that apply to Prime Contractor:

MBE WBE

As a Qualified Joint Venture with an M/WBE partner, in which the value of the M/WBE partner's participation and/or the value of any work subcontracted to other M/WBE firms is at least the amount located on Lines 2 or 3 above, as applicable. The value of any work subcontracted to non M/WBE firms will not be credited towards fulfillment of M/WBE Participation Goals.

As a non M/WBE Prime Contractor that will enter into subcontracts with M/WBE firms the value of which is at least the amount located on Lines 2 or 3 above, as applicable.

Section IV: General Contract Information

What is the expected percentage of the total contract dollar value that you expect to award in subcontracts for services, regardless of M/WBE status? % 50

Enter brief description of the type(s) and dollar value of subcontracts for all any services you plan on subcontracting if awarded this contract. For each item, indicate whether the work is designated for participation by MBEs and/or WBEs and the time frame in which such work is scheduled to begin and end. Use additional sheets if necessary.


- 1. Electrical - \$173,000 -MBE
- 2. HVAC- \$1,056,000
- 3. Plumbing, Boiler, Sprinkler- 170,000
- 4. _____
- 5. _____
- 6. _____
- 7. _____
- 8. _____
- 9. _____
- 10. _____
- 11. _____
- 12. _____
- 13. _____
- 14. _____
- 15. _____
- 16. _____
- 17. _____

✓ Scopes of Subcontract Work

Section V: Vendor Certification and Required Affirmations

I hereby:

- 1) acknowledge my understanding of the M/WBE participation requirements as set forth herein and the pertinent provisions of Section 6-129 of the Administrative Code of the City of New York (Section 6-129), and the rules promulgated thereunder;
- 2) affirm that the information supplied in support of this M/WBE Utilization Plan is true and correct;
- 3) agree, if awarded this Contract, to comply with the M/WBE participation requirements of this Contract, the pertinent provisions of Section 6-129, and the rules promulgated thereunder, all of which shall be deemed to be material terms of this Contract
- 4) agree and affirm that it is a material term of this Contract that the Vendor will award the total dollar value of the M/WBE Participation Goals to certified MBEs and/or WBEs, unless a full waiver is obtained or such goals are modified by the Agency; and
- 5) agree and affirm, if awarded this Contract, to make all reasonable, good faith efforts to meet the M/WBE Participation Goals, or if a partial waiver is obtained or such goals are modified by the Agency, to meet the modified Participation Goals by soliciting and obtaining the participation of certified MBE and/or WBE firms.

Signature  Date 11/18/2015
 Print Name Mervyn Frank Title President

The City of New York Department of Small Business Services
Division of Labor Services Contract Compliance Unit
110 William Street, New York, New York 10038
Phone: (212) 513 - 6323
Fax: (212) 618-8879

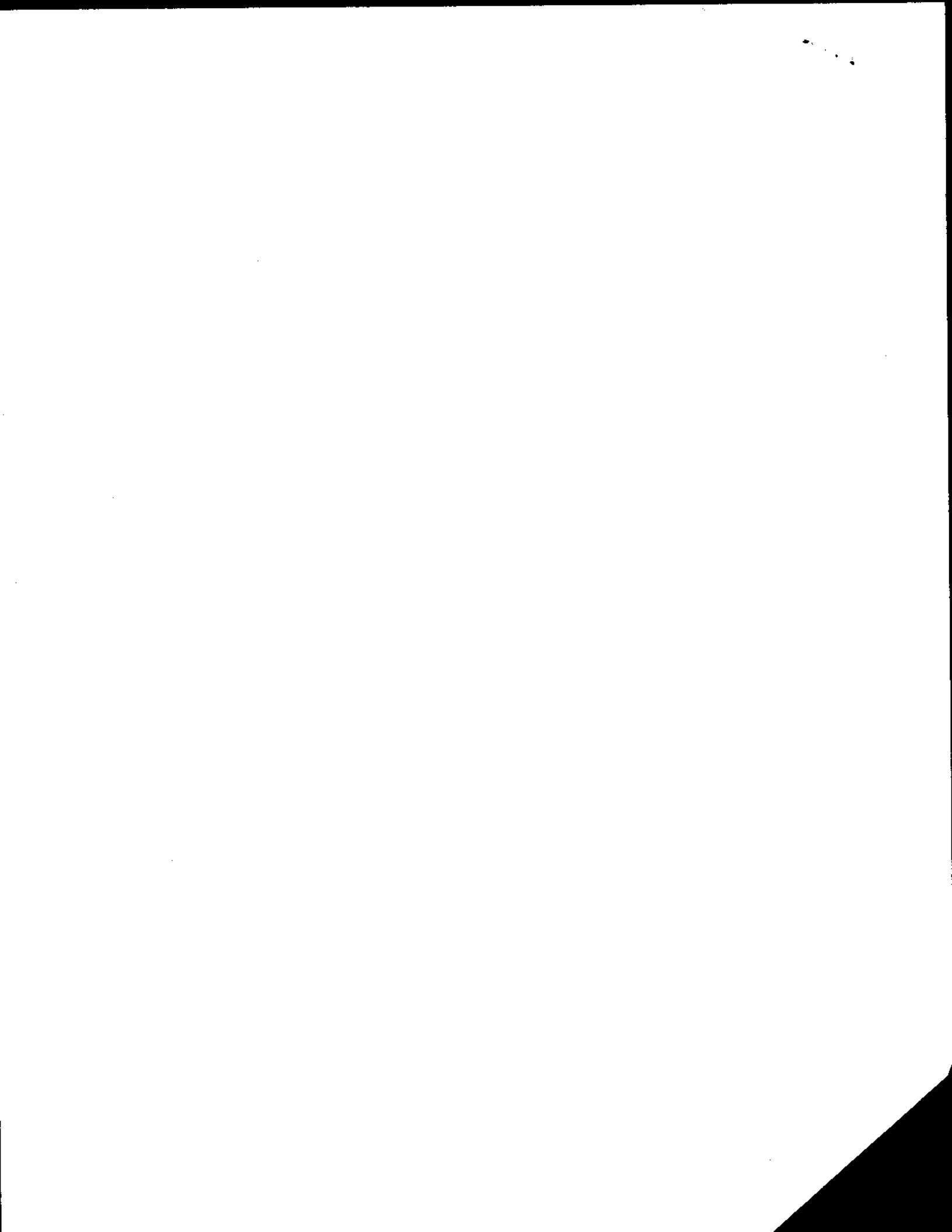
CONSTRUCTION EMPLOYMENT REPORT

GENERAL INFORMATION

1. Your contractual relationship in this contract is: Prime contractor Subcontractor
- 1a. Are M/WBE goals attached to this project? Yes No
2. Please check one of the following if your firm would like information on how to certify with the City of New York as a:
 Minority Owned Business Enterprise Locally Based Business Enterprise
 Women Owned Business Enterprise Emerging Business Enterprise
 Disadvantaged Business Enterprise
- 2a. If you are certified as an **MBE, WBE, LBE, EBE** or **DBE**, what city/state agency are you certified with? NYC, Port Authority, SCA Are you DBE certified? Yes No
3. Please indicate if you would like assistance from SBS in identifying certified M/WBEs for contracting opportunities: Yes No
4. Is this project subject to a project labor agreement? Yes No
5. Are you a Union contractor? Yes No If yes, please list which local(s) you affiliated with _____
6. Are you a Veteran owned company? Yes No

PART I: CONTRACTOR/SUBCONTRACTOR INFORMATION

7. 113091138 Abdulaleem@aaleemconstruction.com
Employer Identification Number or Federal Tax I.D. Email Address
8. A. Aleem Construction Inc.
Company Name
9. 1629 Park Ave, Ste 1B, New York, NY 10029
Company Address and Zip Code
10. Mervyn Frank (212) 534 5500
Chief Operating Officer Telephone Number
11. Same
Designated Equal Opportunity Compliance Officer Telephone Number
(If same as Item #10, write "same")
12. Same
Name of Prime Contractor and Contact Person
(If same as Item #8, write "same")



13. Number of employees in your company: 9

14. Contract information:

(a) DDC (b) \$2,934,964
Contracting Agency (City Agency) Contract Amount

(c) 8502015PV0018C (d) _____
Procurement Identification Number (PIN) Contract Registration Number (CT#)

(e) TBD (f) TBD
Projected Commencement Date Projected Completion Date

(g) Description and location of proposed contract:

Build an entrance Ramp, Handicap bathroom, new elevator and lift.

15. Has your firm been reviewed by the Division of Labor Services (DLS) within the past 36 months and issued a Certificate of Approval? Yes ___ No X

If yes, attach a copy of certificate.

16. Has DLS within the past month reviewed an Employment Report submission for your company and issued a Conditional Certificate of Approval? Yes ___ No X

If yes, attach a copy of certificate.

NOTE: DLS WILL NOT ISSUE A CONTINUED CERTIFICATE OF APPROVAL IN CONNECTION WITH THIS CONTRACT UNLESS THE REQUIRED CORRECTIVE ACTIONS IN PRIOR CONDITIONAL CERTIFICATES OF APPROVAL HAVE BEEN TAKEN.

17. Has an Employment Report already been submitted for a different contract (not covered by this Employment Report) for which you have not yet received compliance certificate? Yes ___ No X If yes,

Date submitted: _____

Agency to which submitted: _____

Name of Agency Person: _____

Contract No: _____

Telephone: _____

18. Has your company in the past 36 months been audited by the United States Department of Labor, Office of Federal Contract Compliance Programs (OFCCP)? Yes ___ No X

If yes,

(a) Name and address of OFCCP office.

N/A

(b) Was a Certificate of Equal Employment Compliance issued within the past 36 months?

Yes ___ No N/A

If yes, attach a copy of such certificate.

(c) Were any corrective actions required or agreed to? Yes ___ No N/A

If yes, attach a copy of such requirements or agreements.

(d) Were any deficiencies found? Yes ___ No N/A

If yes, attach a copy of such findings.

19. Is your company or its affiliates a member or members of an employers' trade association which is responsible for negotiating collective bargaining agreements (CBA) which affect construction site hiring? Yes ___ No X

If yes, attach a list of such associations and all applicable CBA's.

PART II: DOCUMENTS REQUIRED

20. For the following policies or practices, attach the relevant documents (e.g., printed booklets, brochures, manuals, memoranda, etc.). If the policy(ies) are unwritten, attach a full explanation of the practices. See instructions.

X (a) Health benefit coverage/description(s) for all management, nonunion and union employees (whether company or union administered)

X (b) Disability, life, other insurance coverage/description

___ (c) Employee Policy/Handbook

___ (d) Personnel Policy/Manual

___ (e) Supervisor's Policy/Manual

___ (f) Pension plan or 401k coverage/description for all management, nonunion and union employees, whether company or union administered

___ (g) Collective bargaining agreement(s).

___ (h) Employment Application(s)

___ (i) Employee evaluation policy/form(s).

___ (j) Does your firm have medical and/or non-medical (i.e. education, military, personal, pregnancy, child care) leave policy?

21. To comply with the Immigration Reform and Control Act of 1986 when and of whom does your firm require the completion of an I-9 Form?

- | | |
|--|---------------------|
| (a) Prior to job offer | Yes ___ No <u>X</u> |
| (b) After a conditional job offer | Yes <u>X</u> No ___ |
| (c) After a job offer | Yes <u>X</u> No ___ |
| (d) Within the first three days on the job | Yes ___ No <u>X</u> |
| (e) To some applicants | Yes ___ No <u>X</u> |
| (f) To all applicants | Yes <u>X</u> No ___ |
| (g) To some employees | Yes ___ No <u>X</u> |
| (h) To all employees | Yes <u>X</u> No ___ |

22. Explain where and how completed I-9 Forms, with their supportive documentation, are maintained and made accessible.

At the office

23. Does your firm or any of its collective bargaining agreements require job applicants to take a medical examination? Yes ___ No X

If yes, is the medical examination given:

- | | |
|-----------------------------------|----------------|
| (a) Prior to a job offer | Yes ___ No ___ |
| (b) After a conditional job offer | Yes ___ No ___ |
| (c) After a job offer | Yes ___ No ___ |
| (d) To all applicants | Yes ___ No ___ |
| (e) Only to some applicants | Yes ___ No ___ |

If yes, list for which applicants below and attach copies of all medical examination or questionnaire forms and instructions utilized for these examinations.

24. Do you have a written equal employment opportunity (EEO) policy? Yes ___ No X

If yes, list the document(s) and page number(s) where these written policies are located.

25. Does the company have a current affirmative action plan(s) (AAP)

- Minorities and Women
 Individuals with handicaps
 Other. Please specify _____

26. Does your firm or collective bargaining agreement(s) have an internal grievance procedure with respect to EEO complaints? Yes ___ No X

If yes, please attach a copy of this policy.

If no, attach a report detailing your firm's unwritten procedure for handling EEO complaints.

27. Has any employee, within the past three years, filed a complaint pursuant to an internal grievance procedure or with any official of your firm with respect to equal employment opportunity? Yes ___ No X

If yes, attach an internal complaint log. See instructions.

28. Has your firm, within the past three years, been named as a defendant (or respondent) in any administrative or judicial action where the complainant (plaintiff) alleged violation of any anti-discrimination or affirmative action laws? Yes ___ No X

If yes, attach a log. See instructions.

29. Are there any jobs for which there are physical qualifications? Yes ___ No X

If yes, list the job(s), submit a job description and state the reason(s) for the qualification(s).

30. Are there any jobs for which there are age, race, color, national origin, sex, creed, disability, marital status, sexual orientation, or citizenship qualifications? Yes ___ No X

If yes, list the job(s), submit a job description and state the reason(s) for the qualification(s).

SIGNATURE PAGE

I, (print name of authorized official signing) Mervyn Frank hereby certify that the information submitted herewith is true and complete to the best of my knowledge and belief and submitted with the understanding that compliance with New York City's equal employment requirements, as contained in Chapter 56 of the City Charter, Executive Order No. 50 (1980), as amended, and the implementing Rules and Regulations, is a contractual obligation. I also agree on behalf of the company to submit a certified copy of payroll records to the Division of Labor Services on a monthly basis.

A. Aleem Construction Inc.
Contractor's Name

Mervyn Frank President
Name of person who prepared this Employment Report Title

Mervyn Frank President
Name of official authorized to sign on behalf of the contractor Title

(212) 534-5500
Telephone Number

[Signature] Date
Signature of authorized official

If contractors are found to be underutilizing minorities and females in any given trade based on Chapter 56 Section 3H, the Division of Labor Services reserves the right to request the contractor's workforce data and to implement an employment program.

Contractors who fail to comply with the above mentioned requirements or are found to be in noncompliance may be subject to the withholding of final payment.

Willful or fraudulent falsifications of any data or information submitted herewith may result in the termination of the contract between the City and the bidder or contractor and in disapproval of future contracts for a period of up to five years. Further, such falsification may result in civil and/or criminal prosecution.

To the extent permitted by law and consistent with the proper discharge of DLS' responsibilities under Charter Chapter 56 of the City Charter and Executive Order No. 50 (1980) and the implementing Rules and Regulations, all information provided by a contractor to DLS shall be confidential.

Only original signatures accepted.

Sworn to before me this 10 day of 11 2015

[Signature] Date
Notary Public Authorized Signature



FORM A. CONTRACT BID INFORMATION: USE OF SUBCONTRACTORS/TRADES

1. Do you plan to subcontract work on this contract? Yes X No
2. If yes, complete the chart below.

NOTE: All proposed subcontractors with a subcontract in excess of \$750,000 must complete an Employment Report for review and approval before the contract may be awarded and work commences.

SUBCONTRACTOR'S NAME*	OWNERSHIP (ENTER APPROPRIATE CODE LETTERS BELOW)	WORK TO BE PERFORMED BY SUBCONTRACTOR	TRADE PROJECTED FOR USE BY SUBCONTRACTOR	PROJECTED DOLLAR VALUE OF SUBCONTRACT
Radiant Plumbing & Heating Corp.	W	Plumbing, Sprinkler, Boiler	Plumbing	\$170,000
Clairmont Electrical Contracting Inc.	B	Electrical	Electrical	\$173,000
Witch Pride Air Conditioning		HVAC	HVAC	\$990,000

*If subcontractor is presently unknown, please enter the trade (craft name).

OWNERSHIP CODES

- W: White
- B: Black
- H: Hispanic
- A: Asian
- N: Native American
- F: Female

FORM B: PROJECTED WORKFORCE

TRADE CLASSIFICATION CODES

- (J) Journey/level Workers
- (H) Helper
- (TOT) Total by Column
- (A) Apprentice
- (TRN) Trainee

For each trade to be engaged by your company for this project, enter the projected workforce for Males and Females by trade classification on the charts below.

Trade:	MALES					FEMALES								
	(1)		(2)		(3)	(4)		(5)	(6)		(7)	(8)	(9)	(10)
	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	Hisp.	Asian	Native Amer.	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	Hisp.	Asian	Native Amer.
<u>Carpentry</u>					1									
Union Affiliation, if applicable														
<u>N/A</u>														
Total (Col. #1-10):					1									
Total Minority, Male & Female (Col. #2,3,4,5,7,8,9, & 10):		1												
Total Female (Col. #6 - 10):														
TOT					2									1

What are the recruitment sources for you projected hires (i.e., unions, government employment office, job tap center, community outreach)?

In House

FORM C: CURRENT WORKFORCE

TRADE CLASSIFICATION CODES

- (J) Journeylevel Workers
- (H) Helper
- (TOT) Total by Column
- (A) Apprentice
- (TRN) Trainee

For each trade currently engaged by your company for all work performed in New York City, enter the current workforce for Males and Females by trade classification on the charts below.

Trade: GC	MALES					FEMALES								
	(1)		(2)		(3)	(4)		(5)	(6)		(7)	(8)	(9)	(10)
	White Non Hisp.	White Non Hisp.	Black Non Hisp.	Black Non Hisp.	Hisp.	Asian	Native Amer.	White Non Hisp.	White Non Hisp.	Black Non Hisp.	Hisp.	Asian	Native Amer.	
J			2		1									
H			1											
A														
TRN														
TOT			3		1									

Total (Col. #1-10):

Total Minority, Male & Female
(Col. #2,3,4,5,7,8,9, & 10):

Total Female
(Col. #6 - 10):

What are the recruitment sources for you projected hires (i.e., unions, government employment office, job tap center, community outreach)?

Advertisement

**BIDDER'S CERTIFICATION OF COMPLIANCE WITH
IRAN DIVESTMENT ACT**

Pursuant to General Municipal Law §103-g, which generally prohibits the City from entering into contracts with persons engaged in investment activities in the energy sector of Iran, the bidder/proposer submits the following certification:

[Please Check One]

BIDDER'S CERTIFICATION

- By submission of this bid or proposal, each bidder/proposer and each person signing on behalf of any bidder/proposer certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief, that each bidder/proposer is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the State Finance Law.
- I am unable to certify that my name and the name of the bidder/proposer does not appear on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the State Finance Law. I have attached a signed statement setting forth in detail why I cannot so certify.

Dated: _____, New York
_____, 20__



SIGNATURE

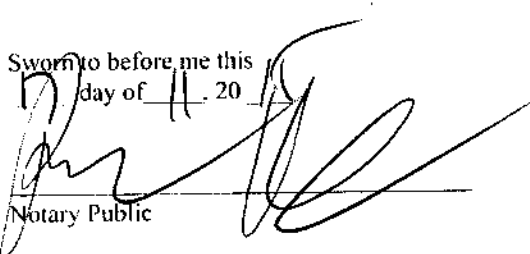
Mervyn Frank

PRINTED NAME

President

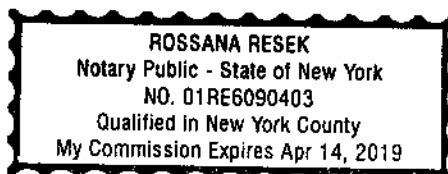
TITLE

Sworn to before me this _____
day of _____, 20__



Notary Public

Dated:



THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

November 9, 2015

ADDENDUM No. # 1

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

PV181HSA2

Harlem School of the Arts, Phase II Building Renovations

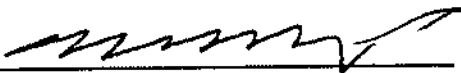
This addendum is issued for the purpose of amending the requirements of the Bid and Contract Documents and is hereby made a part of said Bid and Contract Documents to the same extent as though it were originally included therein.

The bidder is advised that the items listed below apply to the project:

1. **Questions from Bidders and Responses to Questions:**
See Attachment A.
2. **Revisions to the Addendum to the General Conditions:**
See Attachment B.
3. **Revisions to the Drawings:**
See Attachment C.
4. **Revisions to Volume 2 of 3:**
See Attachment D.

THIS ADDENDUM MUST BE SIGNED BY ALL BIDDERS AND ATTACHED TO THEIR BIDS.

If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-3170, (718) 391-1016, or by fax at (718) 391-2615.



Michael Nastasi
Assistant Commissioner
Cultural/ Parks Programs



Name of Bidder

By:



THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

November 12, 2015

ADDENDUM No. # 2

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

PV181HSA2

Harlem School of the Arts, Phase II Building Renovations

This addendum is issued for the purpose of amending the requirements of the Bid and Contract Documents and is hereby made a part of said Bid and Contract Documents to the same extent as though it were originally included therein.

The bidder is advised that the items listed below apply to the project:


1. **Questions from Bidders and Responses to Questions:**
See Attachment A.

THIS ADDENDUM MUST BE SIGNED BY ALL BIDDERS AND ATTACHED TO THEIR BIDS.

If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-3170, (718) 391-1016, or by fax at (718) 391-2615.



for Michael Nastasi
Assistant Commissioner
Cultural/ Parks Programs

A. ALEEM Construction, Inc
Name of Bidder
By:  _____

THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

November 17, 2015

ADDENDUM No. # 3

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

PV181HSA2

Harlem School of the Arts, Phase II Building Renovations

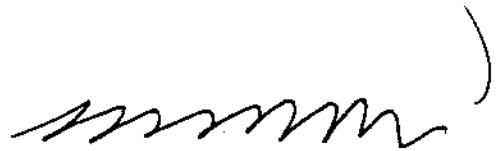
This addendum is issued for the purpose of amending the requirements of the Bid and Contract Documents and is hereby made a part of said Bid and Contract Documents to the same extent as though it were originally included therein.

The bidder is advised that the items listed below apply to the project:

1. **Questions from Bidders and Responses to Questions:**
See Attachment A.

THIS ADDENDUM MUST BE SIGNED BY ALL BIDDERS AND ATTACHED TO THEIR BIDS.

If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-3170, (718) 391-1016, or by fax at (718) 391-2615.



Michael Nastasi
Assistant Commissioner
Cultural/ Parks Programs

A. A. Construction Inc
Name of Bidder

By: [Signature]

**BID BOOKLET
PART A**

SPECIAL NOTICE TO BIDDERS

The New York City Department of Small Business Services (SBS), in conjunction with the New York Business Development Corporation (NYBDC), have established a NYC Construction Loan pilot program to provide prime contractors and subcontractors financing for mobilization costs on certain City construction projects.

Under this initiative, loans are available for early stage mobilization needs such as insurance, labor, supplies and equipment. Bidders are strongly encouraged to visit "Growing Your Business" at www.nyc.gov/nycbusiness to learn more about the loan or contact constructionloan@sbs.nyc.gov / (212) 513-6444 to obtain details and to determine preliminary eligibility.

A successful loan applicant will be required to make an assignment of its contract (or subcontract) payments to the lender NYBDC until the loan is repaid. If the loan is to a subcontractor, a prime contractor must honor the terms of such an assignment.

A prime contractor may not discriminate against a subcontractor or potential subcontractor by reason of the subcontractor's participation, or nonparticipation, in the NYC Construction Loan program.

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

BID BOOKLET

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**CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS**

SPECIAL NOTICE TO BIDDERS

BID SUBMISSION REQUIREMENTS

THE BID SHALL CONSIST OF TWO (2) SEPARATE, SEALED ENVELOPES. THE DOCUMENTS THAT MUST BE COMPLETED AND INCLUDED IN EACH SEPARATE ENVELOPE ARE LISTED BELOW.

BID ENVELOPE #1: Bid Envelope #1 shall contain the following items:

- Bid Form, including Affirmation
- Bid Security (if required, see page 24)
- Schedule B: M/WBE Utilization Plan (if participation goals have been established)

BID ENVELOPE #2: Bid Envelope #2 shall contain **ONLY** the following item:

- Bidder's Identification of Subcontractors (see pages 18 & 19)

**FAILURE TO SUBMIT THE FOUR ITEMS LISTED ABOVE
WILL RESULT IN THE DISQUALIFICATION OF THE BID**

BID ENVELOPE #1: In addition to the items listed above, Bid Envelope #1 shall also contain the following items: **DO NOT** include the items listed below in Bid Envelope #2.

- Bid Breakdown (if required, see page 23)
- Safety Questionnaire
- Construction Employment Report (if bid is \$1,000,000 or more)
- Contract Certificate (if bid is less than \$1,000,000)
- Confirmation of Vendex Compliance
- Bidder's Certification of Compliance with Iran Divestment Act
- Special Experience Requirements Qualification Form (if required, see pages 3, 4)
- Apprenticeship Program Requirements (if required, see pages 10, 11)
- Any Addenda issued prior to the receipt of bids

**FAILURE TO SUBMIT THE NINE ITEMS LISTED ABOVE
MAY RESULT IN THE DISQUALIFICATION OF THE BID.**

- NOTES:**
- (1) All of the above referred to blank forms to be completed and submitted with the bid are included in the BID BOOKLET.
 - (2) If the bidder has any questions or requires additional information, please contact the Department of Design and Construction by phone (718-391-2601) or by fax (718-391-2615).
 - (3) **VENDEX QUESTIONNAIRES:** Vendex Questionnaires, as well as detailed instructions, may be obtained at www.nyc.gov/vendex. The bidder may also obtain Vendex forms and instructions by contacting the Agency Chief Contracting Officer or the contact person for this contract.
 - (4) **SPECIAL EXPERIENCE REQUIREMENTS:** The Bidder is advised that Special Experience Requirements may apply to this contract. Such requirements are set forth on pages 3 and 4 of this Bid Booklet.
 - (5) **SPECIAL EXPERIENCE REQUIREMENTS FOR ASBESTOS:** The Bidder is advised that this contract contains strict requirements regarding the prior experience and licensing of the subcontractor who will perform any required asbestos abatement work. These special experience requirements are set forth in the section of the specifications which describes any required asbestos abatement work.

SPECIAL EXPERIENCE REQUIREMENTS

Bidders are advised that the special experience requirements set forth below apply to the General Construction Contractor if a check mark is indicated before the word "Yes". Compliance with these special experience requirements will be determined solely by the City. Failure to meet these special experience requirements will result in the rejection of the bid as non-responsive.

General Construction Contractor X YES NO

- (A) **EXPERIENCE REQUIREMENTS FOR THE BIDDER (PRIME CONTRACTOR):** The special experience requirements set forth below apply to the bidder. Compliance with such special experience requirements will be evaluated at the time of the bid.
- 1) The bidder must, with the last five (5) consecutive years prior to the bid opening, have successfully completed in a timely fashion at least three (3) projects similar in scope and type to the required work.
- (B) **QUALIFICATION FORM:** For each project submitted to meet the experience requirements set forth above, the bidder must complete and submit with its bid the Qualification Form set forth in this Bid Booklet. All information on the Qualification Form must be provided.
- (C) **CONDITIONS:** The City may, in determining compliance with the special experience requirements set forth above, consider prior projects completed by principal(s) or other employees of the bidder while affiliated with another entity, subject to the conditions set forth below.
- 1) Any principal or other employee on whose prior experience the bidder is relying to demonstrate compliance with this special experience requirement must have held the following: (a) a significant management role in the prior entity with which he/she was affiliated, and (b) a significant management role in the entity submitting the bid for a period of six months or from the inception of the bidding entity.
 - 2) The bidder may not rely on the experience of its principals or other employees to demonstrate compliance with any other requirements, including without limitation, financial requirements or requirements for a specified minimum amount of annual gross revenues.
- (D) **JOINT VENTURES:** In the event the bidder is a joint venture, at least one firm in the joint venture must meet the above described experience requirements.
- (E) **COMPLIANCE:** Compliance with the experience requirements set forth herein will be determined solely by the City. The bidder is advised that failure to meet the above described experience will result in the rejection of the bid as non-responsive.

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Qualification Form

Project ID: PV181HSA2

List previous projects completed to meet the special experience requirements for this contract. Please photocopy this form for submission of all required projects.

Name of Contractor: _____

Name of Project: _____

Location of Project: _____

Owner or Owner's representative (Architect or Engineer) who is familiar with the work performed:

Name: _____

Title: _____ Phone Number: _____

Brief description of work completed: _____

Was the work performed as a prime or a subcontractor: _____

Amount of Contract: _____

Date of Completion: _____

Name of Contractor: _____

Name of Project: _____

Location of Project: _____

Owner or Owner's representative (Architect or Engineer) who is familiar with the work performed:

Name: _____

Title: _____ Phone Number: _____

Brief description of work completed: _____

Was the work performed as a prime or a subcontractor: _____

Amount of Contract: _____

Date of Completion: _____

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MWBE PROGRAM

M/WBE UTILIZATION PLAN

M/WBE Program Requirements: The requirements for the M/WBE Program are set forth on the following pages of this Bid Booklet, in the section entitled "Notice to All Prospective Contractors".

Schedule B: M/WBE Utilization Plan: Schedule B: M/WBE Utilization Plan for this Contract is set forth in this Bid Booklet on the pages following the section entitled "Notice to All Prospective Contractors". The M/WBE Utilization Plan (Part I) indicates whether Participation Goals have been established for this Contract. If Participation Goals have been established for this Contract, the bidder must submit an M/WBE Utilization Plan (Part II) with its bid.

Waiver: The bidder may seek a full or partial pre-award waiver of the Participation Goals in accordance with the "Notice to All Prospective Contractors" (See Part A, Section 10). The bidder's request for a waiver must be submitted at least seven (7) calendar days prior to the bid date. Waiver requests submitted after the deadline will not be considered. The form for requesting a waiver of the Participation Goals is set forth in the M/WBE Utilization Plan (Part III).

Rejection of the Bid: The bidder must complete Schedule B: M/WBE Utilization Plan (Part II) set forth in this Bid Booklet on the pages following the section entitled "Notice to All Prospective Contractors". A Schedule B submitted by the bidder which does not include the Vendor Certification and Required Affirmations (See Section V of Part II) will be deemed to be non-responsive, unless a full waiver of the Participation Goals is granted (Schedule B, Part III). In the event that the City determines that the bidder has submitted a Schedule B where the Vendor Certification and Required Affirmations are completed but other aspects of the Schedule B are not complete, or contain a copy or computation error that is at odds with the Vendor Certification and Required Affirmations, the bidder will be notified by the Agency and will be given four (4) calendar days from receipt of notification to cure the specified deficiencies and return a completed Schedule B to the Agency. Failure to do so will result in a determination that the Bid is non-responsive.

Receipt of notification is defined as the date notice is emailed or faxed (if the bidder has provided an email address or fax number), or no later than five (5) days from the date of mailing or upon delivery, if delivered.

Impact on LBE Requirements: If Participation Goals have been established for the participation of M/WBEs, the contractor is not required to comply with the Locally Based Enterprise Program ("LBE"). The LBE Program is set forth in Article 67 of the Contract.

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NOTICE TO ALL PROSPECTIVE CONTRACTORS

PARTICIPATION BY MINORITY-OWNED AND WOMEN-OWNED BUSINESS
ENTERPRISES IN CITY PROCUREMENT

ARTICLE I. M/WBE PROGRAM

Local Law No. 129 of 2005 added and Local Law 1 of 2013 amended Section 6-129 of the Administrative Code of the City of New York (hereinafter "Section 6-129"). Section 6-129 establishes the program for participation in City procurement ("M/WBE Program") by minority-owned business enterprises ("MBEs") and women-owned business enterprises ("WBEs"), certified in accordance with Section 1304 of the New York City Charter. As stated in Section 6-129, the intent of the program is to address the impact of discrimination on the City's procurement process, and to promote the public interest in avoiding fraud and favoritism in the procurement process, increasing competition for City business, and lowering contract costs. The contract provisions contained herein are pursuant to Section 6-129, and the rules of the Department of Small Business Services ("DSBS") promulgated thereunder.

If this Contract is subject to the M/WBE Program established by Section 6-129, the specific requirements of MBE and/or WBE participation for this Contract are set forth in Schedule B of the Contract (entitled the "M/WBE Utilization Plan"), and are detailed below. The Contractor must comply with all applicable MBE and WBE requirements for this Contract.

All provisions of Section 6-129 are hereby incorporated in the Contract by reference and all terms used herein that are not defined herein shall have the meanings given such terms in Section 6-129. Article I, Part A, below, sets forth provisions related to the participation goals for construction, standard and professional services contracts. Article I, Part B, below, sets forth miscellaneous provisions related to the M/WBE Program.

PART A

PARTICIPATION GOALS FOR CONSTRUCTION, STANDARD
AND PROFESSIONAL SERVICES CONTRACTS OR TASK ORDERS

1. The MBE and/or WBE Participation Goals established for this Contract or Task Orders issued pursuant to this Contract, ("Participation Goals"), as applicable, are set forth on Schedule B, Part I to this Contract (see Page 1, line 1 Total Participation Goals) or will be set forth on Schedule B, Part I to Task Orders issued pursuant to this Contract, as applicable.

The Participation Goals represent a percentage of the total dollar value of the Contract or Task Order, as applicable, that may be achieved by awarding subcontracts to firms certified with New York City Department of Small Business Services as MBEs and/or WBEs, and/or by crediting the participation of prime contractors and/or qualified joint ventures as provided in Section 3 below, unless the goals have been waived or modified by Agency in accordance with Section 6-129 and Part A, Sections 10 and 11 below, respectively.

2. If Participation Goals have been established for this Contract or Task Orders issued pursuant to this Contract, Contractor agrees or shall agree as a material term of the Contract that Contractor shall be subject to the Participation Goals, unless the goals are waived or modified by Agency in accordance with Section 6-129 and Part A, Sections 10 and 11 below, respectively.

3. If Participation Goals have been established for this Contract or Task Order issued pursuant to this Contract, a Contractor that is an MBE and/or WBE shall be permitted to count its own participation toward fulfillment of the relevant Participation Goal, provided that in accordance with Section 6-129 the value of Contractor's participation shall be determined by subtracting from the total value of the Contract or Task Order, as applicable, any amounts that the Contractor pays to direct subcontractors (as defined in Section 6-129(c)(13)), and provided further that a Contractor that is certified as both an MBE and a WBE may count its own participation either toward the goal for MBEs or the goal for WBEs, but not both.

A Contractor that is a qualified joint venture (as defined in Section 6-129(c)(30)) shall be permitted to count a percentage of its own participation toward fulfillment of the relevant Participation Goal. In accordance with Section 6-129, the value of Contractor's participation shall be determined by subtracting from the total value of the Contract or Task Order, as applicable, any amounts that Contractor pays to direct subcontractors, and then multiplying the remainder by the percentage to be applied to total profit to

determine the amount to which an MBE or WBE is entitled pursuant to the joint venture agreement, provided that where a participant in a joint venture is certified as both an MBE and a WBE, such amount shall be counted either toward the goal for MBEs or the goal for WBEs, but not both.

4. A. If **Participation Goals** have been established for this Contract, a prospective contractor shall be required to submit with its bid or proposal, as applicable, a completed Schedule B, M/WBE Utilization Plan, Part II (see Pages 2-4) indicating: (a) whether the contractor is an MBE or WBE, or qualified joint venture; (b) the percentage of work it intends to award to direct subcontractors; and (c) in cases where the contractor intends to award direct subcontracts, a description of the type and dollar value of work designated for participation by MBEs and/or WBEs, and the time frames in which such work is scheduled to begin and end. In the event that this M/WBE Utilization Plan indicates that the bidder or proposer, as applicable, does not intend to meet the **Participation Goals**, the bid or proposal, as applicable, shall be deemed non-responsive, unless Agency has granted the bidder or proposer, as applicable, a pre-award waiver of the Participation Goals in accordance with Section 6-129 and Part A, Section 10 below.

B. (i) If this Contract is for a master services agreement or other requirements type contract that will result in the issuance of Task Orders that will be individually registered ("Master Services Agreement") and is subject to M/WBE **Participation Goals**, a prospective contractor shall be required to submit with its bid or proposal, as applicable, a completed Schedule B, M/WBE Participation Requirements for Master Services Agreements That Will Require Individually Registered Task Orders, Part II (page 2) indicating the prospective contractor's certification and required affirmations to make all reasonable good faith efforts to meet participation goals established on each individual Task Order issued pursuant to this Contract, or if a partial waiver is obtained or such goals are modified by the Agency, to meet the modified **Participation Goals** by soliciting and obtaining the participation of certified MBE and/or WBE firms. In the event that the Schedule B indicates that the bidder or proposer, as applicable, does not intend to meet the **Participation Goals** that may be established on Task Orders issued pursuant to this Contract, the bid or proposal, as applicable, shall be deemed non-responsive.

(ii) **Participation Goals** on a Master Services Agreement will be established for individual Task Orders issued after the Master Services Agreement is awarded. If **Participation Goals** have been established on a Task Order, a contractor shall be required to submit a Schedule B - M/WBE Utilization Plan For Independently Registered Task Orders That Are Issued Pursuant to Master Services Agreements, Part II (see Pages 2-4) indicating: (a) whether the contractor is an MBE or WBE, or qualified joint venture; (b) the percentage of work it intends to award to direct subcontractors; and (c) in cases where the contractor intends to award direct subcontracts, a description of the type and dollar value of work designated for participation by MBEs and/or WBEs, and the time frames in which such work is scheduled to begin and end. The contractor must engage in good faith efforts to meet the **Participation Goals** as established for the Task Order unless Agency has granted the contractor a pre-award waiver of the Participation Goals in accordance with Section 6-129 and Part A, Section 10 below.

C. THE BIDDER/PROPOSER MUST COMPLETE THE SCHEDULE B INCLUDED HEREIN (SCHEDULE B, PART II). A SCHEDULE B SUBMITTED BY THE BIDDER/PROPOSER WHICH DOES NOT INCLUDE THE VENDOR CERTIFICATION AND REQUIRED AFFIRMATIONS (SEE SECTION V OF PART II) WILL BE DEEMED TO BE NON-RESPONSIVE, UNLESS A FULL WAIVER OF THE PARTICIPATION GOALS IS GRANTED (SCHEDULE B, PART III). IN THE EVENT THAT THE CITY DETERMINES THAT THE BIDDER/PROPOSER HAS SUBMITTED A SCHEDULE B WHERE THE VENDOR CERTIFICATION AND REQUIRED AFFIRMATIONS ARE COMPLETED BUT OTHER ASPECTS OF THE SCHEDULE B ARE NOT COMPLETE, OR CONTAIN A COPY OR COMPUTATION ERROR THAT IS AT ODDS WITH THE VENDOR CERTIFICATION AND AFFIRMATIONS, THE BIDDER/PROPOSER WILL BE NOTIFIED BY THE AGENCY AND WILL BE GIVEN FOUR (4) CALENDAR DAYS FROM RECEIPT OF NOTIFICATION TO CURE THE SPECIFIED DEFICIENCIES AND RETURN A COMPLETED SCHEDULE B TO THE AGENCY. FAILURE TO DO SO WILL RESULT IN A DETERMINATION THAT THE BID/PROPOSAL IS NON-RESPONSIVE. RECEIPT OF NOTIFICATION IS DEFINED AS THE DATE NOTICE IS E-MAILED OR FAXED (IF THE BIDDER/PROPOSER HAS PROVIDED AN E-MAIL ADDRESS OR FAX NUMBER), OR NO LATER THAN FIVE (5) CALENDAR DAYS FROM THE DATE OF MAILING OR UPON DELIVERY, IF DELIVERED.

5. Where an M/WBE Utilization Plan has been submitted, the Contractor shall, within 30 days of issuance by Agency of a notice to proceed, submit a list of proposed persons or entities to which it intends to award subcontracts within the subsequent 12 months. In the case of multi-year contracts, such list shall also be submitted every year thereafter. The Agency may also require the Contractor to report periodically about the contracts awarded by its direct subcontractors to indirect subcontractors (as defined in Section 6-129(c)(22)). **PLEASE NOTE: If this Contract is a public works project subject to GML §101(5) (i.e., a contract valued at or**

below \$3M for projects in New York City) or if the Contract is subject to a project labor agreement in accordance with Labor Law §222, and the bidder is required to identify at the time of bid submission its intended subcontractors for the Wicks trades (plumbing and gas fitting; steam heating, hot water heating, ventilating and air conditioning (HVAC); and electric wiring), the Contractor must identify all those to which it intends to award construction subcontracts for any portion of the Wicks trade work at the time of bid submission, regardless of what point in the life of the contract such subcontracts will occur. In identifying intended subcontractors in the bid submission, bidders may satisfy any Participation Goals established for this Contract by proposing one or more subcontractors that are MBEs and/or WBEs for any portion of the Wicks trade work. In the event that the Contractor's selection of a subcontractor is disapproved, the Contractor shall have a reasonable time to propose alternate subcontractors.

6. MBE and WBE firms must be certified by DSBS in order for the Contractor to credit such firms' participation toward the attainment of the **Participation Goals**. Such certification must occur prior to the firms' commencement of work. A list of MBE and WBE firms may be obtained from the DSBS website at www.nyc.gov/buycertified, by emailing DSBS at buyer@sbs.nyc.gov, by calling (212) 513-6356, or by visiting or writing DSBS at 110 William St., New York, New York, 10038, 7th floor. Eligible firms that have not yet been certified may contact DSBS in order to seek certification by visiting www.nyc.gov/getcertified, emailing MWBE@sbs.nyc.gov, or calling the DSBS certification helpline at (212) 513-6311. A firm that is certified as both an MBE and a WBE may be counted either toward the goal for MBEs or the goal for WBEs, but not both. No credit shall be given for participation by a graduate MBE or graduate WBE, as defined in Section 6-129(c)(20).

7. Where an **M/WBE Utilization Plan** has been submitted, the Contractor shall, with each voucher for payment, and/or periodically as Agency may require, submit statements, certified under penalty of perjury, which shall include, but not be limited to, the total amount the Contractor paid to its direct subcontractors, and, where applicable pursuant to Section 6-129(j), the total amount direct subcontractors paid to indirect subcontractors; the names, addresses and contact numbers of each MBE or WBE hired as a subcontractor by the Contractor, and, where applicable, hired by any of the Contractor's direct subcontractors; and the dates and amounts paid to each MBE or WBE. The Contractor shall also submit, along with its voucher for final payment: the total amount it paid to subcontractors, and, where applicable pursuant to Section 6-129(j), the total amount its direct subcontractors paid directly to their indirect subcontractors; and a final list, certified under penalty of perjury, which shall include the name, address and contact information of each subcontractor that is an MBE or WBE, the work performed by, and the dates and amounts paid to each.

8. If payments made to, or work performed by, MBEs or WBEs are less than the amount specified in the Contractor's **M/WBE Utilization Plan**, Agency shall take appropriate action, in accordance with Section 6-129 and Article II below, unless the Contractor has obtained a modification of its **M/WBE Utilization Plan** in accordance with Section 6-129 and Part A, Section 11 below.

9. Where an **M/WBE Utilization Plan** has been submitted, and the Contractor requests a change order the value of which exceeds the greater of 10 percent of the Contract or Task Order, as applicable, or \$500,000, Agency shall review the scope of work for the Contract or Task Order, as applicable, and the scale and types of work involved in the change order, and determine whether the **Participation Goals** should be modified.

10. Pre-award waiver of the **Participation Goals**. (a) A bidder or proposer, or contractor with respect to a Task Order, may seek a pre-award full or partial waiver of the **Participation Goals** in accordance with Section 6-129, which requests that Agency change one or more **Participation Goals** on the grounds that the **Participation Goals** are unreasonable in light of the availability of certified firms to perform the services required, or by demonstrating that it has legitimate business reasons for proposing a lower level of subcontracting in its **M/WBE Utilization Plan**.

(b) To apply for a full or partial waiver of the **Participation Goals**, a bidder, proposer, or contractor, as applicable, must complete Part III (Page 5) of Schedule B and submit such request no later than seven (7) calendar days prior to the date and time the bids, proposals, or Task Orders are due, in writing to the Agency by email at zhangji@ddc.nyc.gov or via facsimile at (718) 391-1886. Bidders, proposers, or contractors, as applicable, who have submitted requests will receive an Agency response by no later than two (2) calendar days prior to the due date for bids, proposals, or Task Orders; provided, however, that if that date would fall on a weekend or holiday, an Agency response will be provided by close-of-business on the business day before such weekend or holiday date.

(c) If the Agency determines that the **Participation Goals** are unreasonable in light of the availability of certified firms to perform the services required, it shall revise the solicitation and extend the deadline for bids and proposals, or revise the Task Order, as applicable.

(d) Agency may grant a full or partial waiver of the Participation Goals to a bidder, proposer or contractor, as applicable, who demonstrates—before submission of the bid, proposal or Task Order, as applicable—that it has legitimate business reasons for proposing the level of subcontracting in its M/WBE Utilization Plan. In making its determination, Agency shall consider factors that shall include, but not be limited to, whether the bidder, proposer or contractor, as applicable, has the capacity and the bona fide intention to perform the Contract without any subcontracting, or to perform the Contract without awarding the amount of subcontracts represented by the Participation Goals. In making such determination, Agency may consider whether the M/WBE Utilization Plan is consistent with past subcontracting practices of the bidder, proposer or contractor, as applicable, whether the bidder, proposer or contractor, as applicable, has made efforts to form a joint venture with a certified firm, and whether the bidder, proposer, or contractor, as applicable, has made good faith efforts to identify other portions of the Contract that it intends to subcontract.

11. **Modification of M/WBE Utilization Plan.** (a) A Contractor may request a modification of its M/WBE Utilization Plan after award of this Contract. PLEASE NOTE: If this Contract is a public works project subject to GML §101(5) (i.e., a contract valued at or below \$3M for projects in New York City) or if the Contract is subject to a project labor agreement in accordance with Labor Law §222, and the bidder is required to identify at the time of bid submission its intended subcontractors for the Wicks trades (plumbing and gas fitting; steam heating, hot water heating, ventilating and air conditioning (HVAC); and electric wiring), the Contractor may request a Modification of its M/WBE Utilization Plan as part of its bid submission. The Agency may grant a request for Modification of a Contractor's M/WBE Utilization Plan if it determines that the Contractor has established, with appropriate documentary and other evidence, that it made reasonable, good faith efforts to meet the Participation Goals. In making such determination, Agency shall consider evidence of the following efforts, as applicable, along with any other relevant factors:

- (i) The Contractor advertised opportunities to participate in the Contract, where appropriate, in general circulation media, trade and professional association publications and small business media, and publications of minority and women's business organizations;
- (ii) The Contractor provided notice of specific opportunities to participate in the Contract, in a timely manner, to minority and women's business organizations;
- (iii) The Contractor sent written notices, by certified mail or facsimile, in a timely manner, to advise MBEs or WBEs that their interest in the Contract was solicited;
- (iv) The Contractor made efforts to identify portions of the work that could be substituted for portions originally designated for participation by MBEs and/or WBEs in the M/WBE Utilization Plan, and for which the Contractor claims an inability to retain MBEs or WBEs;
- (v) The Contractor held meetings with MBEs and/or WBEs prior to the date their bids or proposals were due, for the purpose of explaining in detail the scope and requirements of the work for which their bids or proposals were solicited;
- (vi) The Contractor made efforts to negotiate with MBEs and/or WBEs as relevant to perform specific subcontracts, or act as suppliers or service providers;
- (vii) Timely written requests for assistance made by the Contractor to Agency's M/WBE liaison officer and to DSBS;
- (viii) Description of how recommendations made by DSBS and Agency were acted upon and an explanation of why action upon such recommendations did not lead to the desired level of participation of MBEs and/or WBEs.

Agency's M/WBE officer shall provide written notice to the Contractor of the determination.

(b) The Agency may modify the **Participation Goals** when the scope of the work has been changed by the Agency in a manner that affects the scale and types of work that the Contractor indicated in its M/WBE Utilization Plan would be awarded to subcontractors.

12. If this Contract is for an indefinite quantity of construction, standard or professional services or is a requirements type contract and the Contractor has submitted an M/WBE Utilization Plan and has committed to subcontract work to MBEs and/or WBEs in order to meet the **Participation Goals**, the Contractor will not be deemed in violation of the M/WBE Program requirements for this Contract with regard to any work which was intended to be subcontracted to an MBE and/or WBE to the extent that the Agency has determined that such work is not needed.

13. If **Participation Goals** have been established for this Contract or a Task Order issued pursuant to this Contract, at least once annually during the term of the Contract or Task Order, as applicable, Agency shall review the Contractor's progress toward attainment of its M/WBE Utilization Plan, including but not limited to, by reviewing the percentage of work the Contractor has actually awarded to MBE and/or WBE subcontractors and the payments the Contractor made to such subcontractors.

14. If **Participation Goals** have been established for this Contract or a Task Order issued pursuant to this Contract, Agency shall evaluate and assess the Contractor's performance in meeting those goals, and such evaluation and assessment shall become part of the Contractor's overall contract performance evaluation.

PART B: MISCELLANEOUS

1. The Contractor shall take notice that, if this solicitation requires the establishment of an **M/WBE Utilization Plan**, the resulting contract may be audited by DSBS to determine compliance with Section 6-129. See §6-129(e)(10). Furthermore, such resulting contract may also be examined by the City's Comptroller to assess compliance with the **M/WBE Utilization Plan**.
2. Pursuant to DSBS rules, construction contracts that include a requirement for an **M/WBE Utilization Plan** shall not be subject to the law governing Locally Based Enterprises set forth in Section 6-108.1 of the Administrative Code of the City of New York.
3. DSBS is available to assist contractors and potential contractors in determining the availability of MBEs and/or WBEs to participate as subcontractors, and in identifying opportunities that are appropriate for participation by MBEs and/or WBEs in contracts.
4. Prospective contractors are encouraged to enter into qualified joint venture agreements with MBEs and/or WBEs as defined by Section 6-129(c)(30).
5. By submitting a bid or proposal the Contractor hereby acknowledges its understanding of the **M/WBE Program** requirements set forth herein and the pertinent provisions of Section 6-129, and any rules promulgated thereunder, and if awarded this Contract, the Contractor hereby agrees to comply with the **M/WBE Program** requirements of this Contract and pertinent provisions of Section 6-129, and any rules promulgated thereunder, all of which shall be deemed to be material terms of this Contract. The Contractor hereby agrees to make all reasonable, good faith efforts to solicit and obtain the participation of MBEs and/or WBEs to meet the required **Participation Goals**.

ARTICLE II. ENFORCEMENT

1. If Agency determines that a bidder or proposer, as applicable, has, in relation to this procurement, violated Section 6-129 or the DSBS rules promulgated pursuant to Section 6-129, Agency may disqualify such bidder or proposer, as applicable, from competing for this Contract and the Agency may revoke such bidder's or proposer's prequalification status, if applicable.
2. Whenever Agency believes that the Contractor or a subcontractor is not in compliance with Section 6-129 or the DSBS rules promulgated pursuant to Section 6-129, or any provision of this Contract that implements Section 6-129, including, but not limited to any **M/WBE Utilization Plan**, Agency shall send a written notice to the Contractor describing the alleged noncompliance and offering the Contractor an opportunity to be heard. Agency shall then conduct an investigation to determine whether such Contractor or subcontractor is in compliance.
3. In the event that the Contractor has been found to have violated Section 6-129, the DSBS rules promulgated pursuant to Section 6-129, or any provision of this Contract that implements Section 6-129, including, but not limited to, any **M/WBE Utilization Plan**, Agency may determine that one of the following actions should be taken:
 - (a) entering into an agreement with the Contractor allowing the Contractor to cure the violation;
 - (b) revoking the Contractor's pre-qualification to bid or make proposals for future contracts;
 - (c) making a finding that the Contractor is in default of the Contract;
 - (d) terminating the Contract;
 - (e) declaring the Contractor to be in breach of Contract;
 - (f) withholding payment or reimbursement;
 - (g) determining not to renew the Contract;assessing actual and consequential damages;

- (i) assessing liquidated damages or reducing fees, provided that liquidated damages may be based on amounts representing costs of delays in carrying out the purposes of the M/WBE Program, or in meeting the purposes of the Contract, the costs of meeting utilization goals through additional procurements, the administrative costs of investigation and enforcement, or other factors set forth in the Contract;
- (j) exercising rights under the Contract to procure goods, services or construction from another contractor and charge the cost of such contract to the Contractor that has been found to be in noncompliance; or
- (k) taking any other appropriate remedy.

4. If an **M/WBE Utilization Plan** has been submitted, and pursuant to this Article II, Section 3, the Contractor has been found to have failed to fulfill its **Participation Goals** contained in its **M/WBE Utilization Plan** or the **Participation Goals** as modified by Agency pursuant to Article I, Part A, Section 11, Agency may assess liquidated damages in the amount of ten percent (10%) of the difference between the dollar amount of work required to be awarded to MBE and/or WBE firms to meet the **Participation Goals** and the dollar amount the Contractor actually awarded and paid, and/or credited, to MBE and/or WBE firms. In view of the difficulty of accurately ascertaining the loss which the City will suffer by reason of Contractor's failure to meet the **Participation Goals**, the foregoing amount is hereby fixed and agreed as the liquidated damages that the City will suffer by reason of such failure, and not as a penalty. Agency may deduct and retain out of any monies which may become due under this Contract the amount of any such liquidated damages; and in case the amount which may become due under this Contract shall be less than the amount of liquidated damages suffered by the City, the Contractor shall be liable to pay the difference.

5. Whenever Agency has reason to believe that an MBE and/or WBE is not qualified for certification, or is participating in a contract in a manner that does not serve a commercially useful function (as defined in Section 6-129(c)(8)), or has violated any provision of Section 6-129, Agency shall notify the Commissioner of DSBS who shall determine whether the certification of such business enterprise should be revoked.

6. Statements made in any instrument submitted to Agency pursuant to Section 6-129 shall be submitted under penalty of perjury and any false or misleading statement or omission shall be grounds for the application of any applicable criminal and/or civil penalties for perjury. The making of a false or fraudulent statement by an MBE and/or WBE in any instrument submitted pursuant to Section 6-129 shall, in addition, be grounds for revocation of its certification.

7. The Contractor's record in implementing its **M/WBE Utilization Plan** shall be a factor in the evaluation of its performance. Whenever Agency determines that a Contractor's compliance with an **M/WBE Utilization Plan** has been unsatisfactory, Agency shall, after consultation with the City Chief Procurement Officer, file an advice of caution form for inclusion in VENDEX as caution data.

Tax ID #: _____

APT E-
PIN#: 85015B0170

Contract # 1 - General Construction Work

SCHEDULE B - M/WBE Utilization Plan

Part I: M/WBE Participation Goals

Part I to be completed by contracting agency

Contract Overview

APT E-Pin # 85015B0170 FMS Project ID#: PV181HSA2
 Project Title/Agency Harlem School of Arts, Phase II Building Renovations
 PIN # 8502015PV0018C
 Bid/Proposal _____
 Response Date: November 18, 2015
 Contracting Agency Department of Design and Construction
 Agency Address 30-30 Thomson Avenue City Long Island City State NY Zip Code 11101
 Contact Person Norma Negrón Title MWBE Liaison & Compliance Analyst
 Telephone # (718) 391-1502 Email negronn@ddc.nyc.gov

Project Description (attach additional pages if necessary)

This Project consists of upgrade of the existing facility which will include the rehabilitation of the main entrance to achieve barrier free accessibility, creation of a barrier free restroom on the second floor, installation of a new elevator to serve the first, second, and third floors, replacing the boiler and hot water systems, new central air-conditioning units, modification of existing air- distribution system, and provide additional electrical outlets in the "G Space" to be used for portable sound and lighting devices.

M/WBE Participation Goals for Services

Enter the percentage amount for each group or for an unspecified goal. Please note that there are no goals for Asian Americans in Professional Services

Prime Contract Industry: Construction

Group	Percentage
<u>Unspecified *</u>	<u>14 %</u>
OR	
<u>Black American</u>	<u>UNSPECIFIED %</u>
<u>Hispanic American</u>	<u>UNSPECIFIED %</u>
<u>Asian American</u>	<u>UNSPECIFIED %</u>
<u>Women</u>	<u>UNSPECIFIED %</u>
Total Participation Goals	14 %

Line 1

* Note: For this procurement, individual ethnicity and gender goals are not specified. The Total Participation Goals for construction contracts may be met by using Black American, Hispanic American, Asian American or Women certified firms or any combination of such firms.

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Tax ID #: _____

APT E-

PIN#: 85015B0170

SCHEDULE B - Part II: M/WBE Participation Plan

Part II to be completed by the bidder/proposer:

Please note: For Non-M/WBE Prime Contractors who will NOT subcontract any services and will self-perform the entire contract, you must obtain a FULL waiver by completing the Waiver Application on pages 9 and 9a and timely submitting it to the contracting agency pursuant to the Notice to Prospective Contractors. Once a FULL WAIVER is granted, it must be included with your bid or proposal and you do not have to complete or submit this form with your bid or proposal.

Section I: Prime Contractor Contact Information

Tax ID # _____	FMS Vendor ID # _____
Business Name _____	Contact Person _____
Address _____	
Telephone # _____	Email _____

Section II: M/WBE Utilization Goal Calculation: Check the applicable box and complete subsection.

PRIME CONTRACTOR ADOPTING AGENCY M/WBE PARTICIPATION GOALS

<input type="checkbox"/> For Prime Contractors (including Qualified Joint Ventures and M/WBE firms) adopting Agency M/WBE Participation Goals. Calculate the total dollar value of your total bid that you agree will be awarded to M/WBE subcontractors for services and/or credited to an M/WBE prime contractor or Qualified Joint Venture. Please review the Notice to Prospective Contractors for more information on how to obtain credit for M/WBE participation.	Total Bid/Proposal Value \$ _____	X	Agency Total Participation Goals (Line 1, Page 6) _____	=	Calculated M/WBE Participation Amount \$ _____ Line 2
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PRIME CONTRACTOR OBTAINED PARTIAL WAIVER APPROVAL: ADOPTING MODIFIED M/WBE PARTICIPATION GOALS

<input type="checkbox"/> For Prime Contractors (including Qualified Joint Ventures and M/WBE firms) adopting Modified M/WBE Participation Goals. Calculate the total dollar value of your total bid that you agree will be awarded to M/WBE subcontractors for services and/or credited to an M/WBE prime contractor or Qualified Joint Venture. Please review the Notice to Prospective Contractors for more information on how to obtain credit for M/WBE participation.	Total Bid/Proposal Value \$ _____	X	Adjusted Participation Goal (From Partial Waiver) _____	=	Calculated M/WBE Participation Amount \$ _____ Line 3
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Section III: M/WBE Utilization Plan: How Proposer/Bidder Will Fulfill M/WBE Participation Goals. Please review the Notice to Prospective Contractors for more information on how to obtain credit for M/WBE participation. Check applicable box. The Proposer or Bidder will fulfill the M/WBE Participation Goals:

As an M/WBE Prime Contractor that will self-perform and/or subcontract to other M/WBE firms a portion of the contract the value of which is at least the amount located on Lines 2 or 3 above, as applicable. The value of any work subcontracted to non-M/WBE firms will not be credited towards fulfillment of M/WBE Participation Goals. Please check all that apply to Prime Contractor:

MBE WBE

As a Qualified Joint Venture with an M/WBE partner, in which the value of the M/WBE partner's participation and/or the value of any work subcontracted to other M/WBE firms is at least the amount located on Lines 2 or 3 above, as applicable. The value of any work subcontracted to non M/WBE firms will not be credited towards fulfillment of M/WBE Participation Goals.

As a non M/WBE Prime Contractor that will enter into subcontracts with M/WBE firms the value of which is at least the amount located on Lines 2 or 3 above, as applicable.

Section IV: General Contract Information

What is the expected percentage of the total contract dollar value that you expect to award in subcontracts for services, regardless of M/WBE status? % _____

Enter brief description of the type(s) and dollar value of subcontracts for all M/WBE firms that you plan to subcontracting if awarded this contract. For each item, indicate whether you expect to have participation by MBEs and/or WBEs, and the time frame in which such work is scheduled to begin and end. Attach additional sheets if necessary.

✓ Scopes of Subcontract Work

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Section V: Vendor Certification and Required Affirmations

I hereby:

- 1) acknowledge my understanding of the M/WBE participation requirements as set forth herein and the pertinent provisions of Section 6-129 of the Administrative Code of the City of New York (Section 6-129), and the rules promulgated thereunder;
- 2) affirm that the information supplied in support of this M/WBE Utilization Plan is true and correct;
- 3) agree, if awarded this Contract, to comply with the M/WBE participation requirements of this Contract, the pertinent provisions of Section 6-129, and the rules promulgated thereunder, all of which shall be deemed to be material terms of this Contract
- 4) agree and affirm that it is a material term of this Contract that the Vendor will award the total dollar value of the M/WBE Participation Goals to certified MBEs and/or WBEs, unless a full waiver is obtained or such goals are modified by the Agency; and
- 5) agree and affirm, if awarded this Contract, to make all reasonable, good faith efforts to meet the M/WBE Participation Goals, or if a partial waiver is obtained or such goals are modified by the Agency, to meet the modified Participation Goals by soliciting and obtaining the participation of certified MBE and/or WBE firms.

Signature _____
Print Name _____

Date _____
Title _____

SCHEDULE B – PART III – REQUEST FOR WAIVER OF M/WBE PARTICIPATION REQUIREMENT

Contract Overview

Tax ID # _____ FMS Vendor ID # _____

Business Name _____

Contact Name _____ Telephone # _____ Email _____

Type of Procurement Competitive Sealed Bids Other Bid/Response Due Date _____

Applicable to this procurement Contracting Agency _____

M/WBE Participation Goals as described in bid/solicitation documents

_____ % Agency M/WBE Participation Goal

M/WBE Participation Goal as articulated by vendor/proposer

_____ % of the total contract value anticipated in good faith by the bidder/proposer to be subcontracted for services and/or credited to an M/WBE Prime Contractor or Qualified Joint Venture.

Basis for Waiver Request: Check appropriate box & explain in detail below (attach additional pages if needed)

- Vendor does not subcontract services, and has the capacity and good faith intention to perform all such work itself with its own employees.
- Vendor subcontracts some of this type of work but at a lower % than bid/solicitation describes, and has the capacity and good faith intention to do so on this contract. (Attach subcontracting plan outlining services that the vendor will self-perform and subcontract to other vendors or consultants.)
- Vendor has other legitimate business reasons for proposing the M/WBE Participation Goal above. Explain under separate cover.

References

Provide references for all subcontracts awarded for NY agencies (if any). Include information on which subcontract awarded to which agency, and any other relevant information if necessary.

CONTRACT NO.	AGENCY	DATE COMPLETED
Total Contract Amount \$ _____	Total Amount Subcontracted \$ _____	
Item of Work Subcontracted and Value of subcontract _____	Item of Work Subcontracted and Value of subcontract _____	Item of Work Subcontracted and Value of subcontract _____
CONTRACT NO. _____	AGENCY _____	DATE COMPLETED _____
Total Contract Amount \$ _____	Total Amount Subcontracted \$ _____	
Item of Work Subcontracted and Value of subcontract _____	Item of Work Subcontracted and Value of subcontract _____	Item of Work Subcontracted and Value of subcontract _____
CONTRACT NO. _____	AGENCY _____	DATE COMPLETED _____
Total Contract Amount \$ _____	Total Amount Subcontracted \$ _____	
Item of Work Subcontracted and Value of subcontract _____	Item of Work Subcontracted and Value of subcontract _____	Item of Work Subcontracted and Value of subcontract _____

List 3 most recent contracts performed for other entities. Include information for each subcontract awarded in performance of such contracts. Add more pages if necessary.
 (Complete ONLY if vendor has performed fewer than 3 New York City contracts)

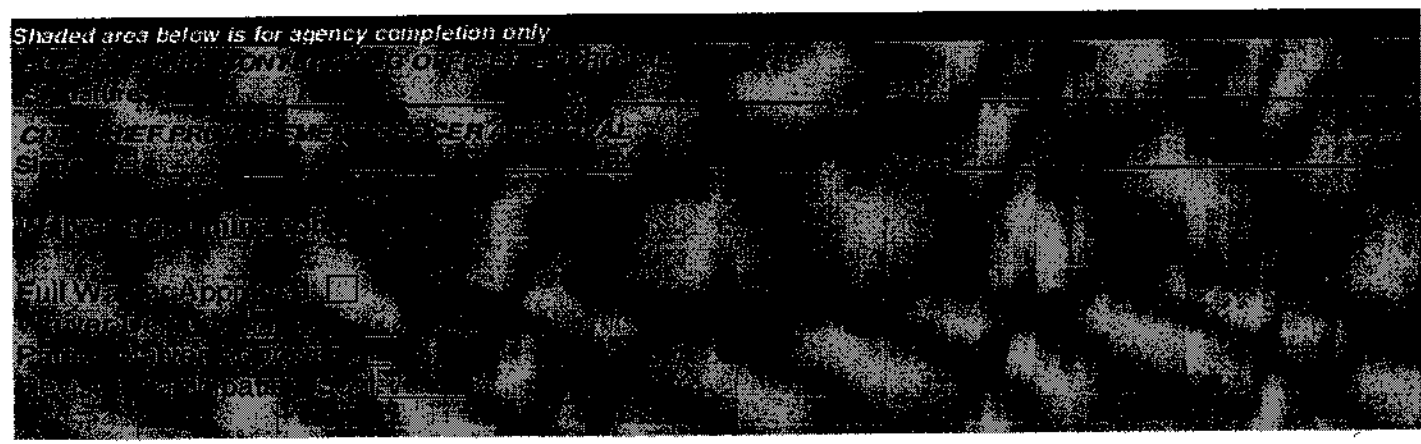
TYPE OF Contract	ENTITY	DATE COMPLETED
Manager at entity that hired vendor (Name/Phone No./Email)		
Total Contract Amount \$	Total Amount Subcontracted \$	
Type of Work Subcontracted		

TYPE OF Contract	AGENCY/ENTITY	DATE COMPLETED
Manager at agency/entity that hired vendor (Name/Phone No./Email)		
Total Contract Amount \$	Total Amount Subcontracted \$	
Item of Work Subcontracted and Value of subcontract	Item of Work Subcontracted and Value of subcontract	Item of Work Subcontracted and Value of subcontract

TYPE OF Contract	AGENCY/ENTITY	DATE COMPLETED
Manager at entity that hired vendor (Name/Phone No./Email)		
Total Contract Amount \$	Total Amount Subcontracted \$	
Item of Work Subcontracted and Value of subcontract	Item of Work Subcontracted and Value of subcontract	Item of Work Subcontracted and Value of subcontract

VENDOR CERTIFICATION: I hereby affirm that the information supplied in support of this waiver request is true and correct, and that this request is made in good faith.

Signature: _____ Date: _____
 Print Name: _____ Title: _____



APPRENTICESHIP PROGRAM REQUIREMENTS

Bidders are advised that the Apprenticeship Program Requirements set forth below apply to each contract for which a check mark is indicated before the word "Yes". Compliance with these requirements will be determined solely by the City.

General Construction _____ YES NO

* Note: Even if Yes is marked, the Exemption set forth below may apply.

1) Apprenticeship Program Requirements

NOTICE TO BIDDERS: Please be advised that, pursuant to the authority granted to the City under Labor Law Section 816-b, the Department of Design and Construction hereby requires that the contractor awarded a contract as a result of this Invitation for Bids, and any of its subcontractors with subcontracts worth one million dollars or over, have, prior to entering into such contract or subcontract, apprenticeship agreements appropriate for the type and scope of work to be performed that have been registered with, and approved by, the New York State Commissioner of Labor. In addition, the contractor and its subcontractors will be required to show that such apprenticeship programs have three years of current, successful experience in providing career opportunities.

The failure to prove, upon request, that these requirements have been met shall result in the contract not being awarded to the contractor or the subcontract not being approved.

Please be further advised that, pursuant to Labor Law Section 220, the allowable ratio of apprentices to journeypersons in any craft classification shall not be greater than the ratio permitted to the contractor as to its workforce on any job under the registered

2) Apprenticeship Program Questionnaire

The bidder must submit a completed and signed Apprenticeship Program Questionnaire, unless it qualifies for the exemption set forth below. The Questionnaire is set forth on the

3) Exemption

Bidders for the General Construction Contract are advised that the exemption set forth below applies if an "X" is indicated before the word "Yes".

_____ YES NO

Exemption: If the bidder intends to subcontract 100% of the construction work, it is not required to demonstrate that it has an Apprenticeship Agreement(s), nor is it required to submit an Apprenticeship Program Questionnaire. If the bidder qualifies for this exemption, it shall submit a letter stating that it intends to subcontract 100% of the construction work. As indicated above, the Apprenticeship Program Requirements apply to subcontracts worth one million dollars or more.

APPRENTICESHIP PROGRAM QUESTIONNAIRE

PROJECT ID: PV181HSA2

The bidder must submit a completed and signed Apprenticeship Program Questionnaire unless it qualifies for the exemption set forth on the previous page.

Name of Bidder: _____

1) Does the bidder have an Apprenticeship Program appropriate for the type and scope of work to be performed? [Note: Participation may be by either direct sponsorship or through collective bargaining agreement(s).]

_____ YES _____ NO

2) Has the bidder's Apprenticeship Program been registered with, and approved by, the New York State Commissioner of Labor?

_____ YES _____ NO

3) Has the bidder's Apprenticeship Program had three years of successful experience in providing career opportunities?

_____ YES _____ NO

If the answer to Question #3 is "Yes", the bidder shall, in the space below, provide information regarding the experience the Apprenticeship Program has had in providing career opportunities. The bidder may attach additional pages if necessary.

Bidder: _____

By: _____
(Signature of Partner or Corporate Officer)

Title: _____

Date: _____

BID FORM
THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

**BID FOR FURNISHING ALL LABOR AND
MATERIAL NECESSARY AND REQUIRED FOR:**

PROJECT ID: PV181HSA2

**Harlem School of the Arts, Phase II Building Renovations
645 St. Nicholas Avenue
Manhattan 10031**

Name of Bidder: _____

Date of Bid Opening: _____

Bidder is: (Check one, whichever applies) Individual () Partnership () Corporation ()

Place of Business of Bidder: _____

Bidder's Telephone Number: _____ Bidder's Fax Number: _____

Bidder's Email Address: _____

Residence of Bidder (If Individual): _____

If Bidder is a Partnership, fill in the following blanks:

Names of Partners

Residence of Partners

If Bidder is a Corporation, fill in the following blanks:

Organized under the laws of the State of _____

Name and Home Address of President: _____

Name and Home Address of Secretary: _____

Name and Home Address of Treasurer: _____

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BID FORM

The above-named Bidder affirms and declares:

1. The said bidder is of lawful age and the only one interested in this bid; and no person, firm or corporation other than hereinbefore named has any interest in this bid, or in the Contract proposed to be taken.
2. By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief: (1) the prices in this bid have been arrived at independently without collusion, consultation, communication or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor; (2) unless otherwise required by law, the prices quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and (3) no attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.
3. No councilman or other officer or employee or person whose salary is payable in whole or in part from the City Treasury is directly or indirectly interested in this bid, or in the supplies, materials, equipment, work or labor to which it relates, or in any of the profits thereof.
4. The bidder is not in arrears to the City of New York upon debt or contract or taxes, and is not a defaulter, as surety or otherwise, upon any obligation of the City of New York, and has not been declared not responsible, or disqualified, by any agency of the City of New York or State of New York, nor is there any proceeding pending relating to the responsibility or qualification of the bidder to receive public contracts except as set forth on the Affirmation included as page 17 of this Bid Booklet.

The bidder hereby affirms that it has paid all applicable City income, excise and other taxes for all years it has conducted business activities in New York City.

5. The bidder, as an individual, or as a member, partner, director or officer of the bidder, if the same be a firm, partnership or corporation, executes this document expressly warranting and representing that should this bid be accepted by the City and the Contract awarded to him, he and his subcontractors engaged in the performance:
(1) will comply with the provisions of Section 6-108 of the Administrative Code of the City of New York and the non-discrimination provisions of Section 220a of the New York State Labor Law, as more expressly and in detail set forth in the Agreement; (2) will comply with Section 6-109 of the Administrative Code of the City of New York in relation to minimum wages and other stipulations as more expressly and in detail set forth in the Agreement; (3) have complied with the provisions of the aforesaid laws since their respective effective dates, and (4) will post notices to be furnished by the City, setting forth the requirements of the aforesaid laws in prominent and conspicuous places in each and every plant, factory, building and structure where employees engaged in the performance of the Contract can readily view it, and will continue to keep such notices posted until the supplies, materials and equipment, or work labor and services required to be furnished or rendered by the Contractor have been finally accepted by the City. In the event of any breach or violation of the foregoing, the Contractor may be subject to damages, liquidated or otherwise, cancellation of the Contract and suspension as a bidder for a period of three years. (The words, "the bidder", "he", "his", and "him" where used shall mean the individual bidder, firm, partnership or corporation executing this bid).

6. Compliance Report

The bidder, as an individual, or as a member, partner, director, or officer of the bidder, if the same be a firm, partnership, or corporation, (1) represents that his attention has been specifically drawn to Executive Order No. 50, dated April 25, 1980, on Equal Employment Compliance of the contract, and (2) warrants that he will comply with the provisions of Executive Order No. 50. The Employment Report must be submitted as part of the bid.

The bidder, as an individual, or as a member, partner, director, or officer of the bidder, if the same be a firm, partnership, or corporation, executes this document expressly warranting that he will comply with: (1) the provision of the contract on providing records, Chapter 8.

7. By submission of this bid, the bidder certifies that it now has and will continue to have the financial capability to fully perform the work required for this contract. Any award of this contract will be made in reliance upon such certification. Upon request therefor, the bidder will submit written verification of such financial capability in a form that is acceptable to the department.

8. In accordance with Section 165 of the State Finance Law, the bidder agrees that tropical hardwoods, as defined in Section 165 of the State Finance Law, shall not be utilized in the performance of this Contract, except as the same are permitted by the foregoing provision of law.

9. The bidder has visited and examined the site of the work and has carefully examined the Contract in the form approved by the Corporation Counsel, and will execute the Contract and perform all its items, covenants and conditions, and will provide, furnish and deliver all the work, materials, supplies, tools and appliances for all labor and materials necessary or required for the hereinafter named work, all in strict conformity with the Contract, for the prices set forth in the Bid Schedule:

Section V: Vendor Certification and Required Affirmations:

I hereby:

- 1) acknowledge my understanding of the M/WBE participation requirements as set forth in this Contract and the pertinent provisions of Section 6-129 of the Administrative Code of the City of New York and the rules promulgated thereunder;
- 2) affirm that the information supplied in support of the M/WBE Utilization Plan is true and correct;
- 3) agree, if awarded this Contract, to comply with the M/WBE participation requirements of this Contract, the pertinent provisions of Section 6-129, and the rules promulgated thereunder, all of which shall be deemed to be material terms of this Contract;
- 4) agree and affirm that it is a material term of this Contract that the Vendor will award the total dollar value of the M/WBE Participation Goals to certified MBEs and/or WBEs, unless a full waiver is obtained or such goals are modified by the Agency; and
- 5) agree and affirm, if awarded this Contract, to make all reasonable, good faith efforts to meet the M/WBE Participation Goals, or if a partial waiver is obtained or such goals are modified by the Agency, to meet the modified Participation Goals by soliciting and obtaining the participation of certified MBE and/or WBE firms.

BID FORM

PROJECT ID: PV181HSA2

TOTAL BID PRICE: In the space provided below, the Bidder shall indicate the total bid price in figures.

- A. **LUMP SUM PRICE** - Total price for all labor and material for all required work, excluding item (B) set forth below. Total Price shall include all costs and expenses, i.e. labor, material overhead and profit for all the Work, described and shown in the drawings and specifications.

Total Price For Labor

Total Price for Material Sold and Delivered

\$ _____ +

\$ _____

Total Price for Item A= \$ _____

- B. **ALLOWANCE** for Incidental Asbestos Abatement (Section 028013 of the Specifications)

\$15,000.00

TOTAL BID PRICE (Add A + B)
(a/k/a BID PROPOSAL)

\$ _____

BIDDER'S SIGNATURE AND AFFIDAVIT

* **SUBCONTRACTOR IDENTIFICATION:** You **MUST** complete and submit the form entitled "Bidder's Identification of Subcontractors" (page 19) at the time you submit your bid. You must submit this form in a separate, sealed envelope (**BID ENVELOPE #2**). In the event an award of contract is not made to the Bidder, the Bidder hereby authorizes the Agency to shred the form entitled "Bidder's Identification of Subcontractors". Yes No

Bidder: _____

By: _____
(Signature of Partner or corporate officer)

Attest:
(Corporate Seal)

Secretary of Corporate Bidder

Affidavit on the following page should be subscribed and sworn to before a Notary Public

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BID FORM (TO BE NOTARIZED)

AFFIDAVIT WHERE BIDDERS IS AN INDIVIDUAL

STATE OF NEW YORK, COUNTY OF _____ ss:

_____ being duly sworn says:

I am the person described in and who executed the foregoing bid, and the several matters therein stated are in all respects true.

(Signature of the person who signed the Bid)

Subscribed and sworn to before me this
_____ day of _____,

Notary Public

AFFIDAVIT WHERE BIDDERS IS A PARTNERSHIP

STATE OF NEW YORK, COUNTY OF _____ ss:

_____ being duly sworn says:

I am a member of _____ the firm described in and which executed the foregoing bid. subscribed the name of the firm thereto on behalf of the firm, and the several matters therein stated are in all respects true.

(Signature of Partner who signed the Bid)

Subscribed and sworn to before me this
_____ day of _____,

Notary Public

AFFIDAVIT WHERE BIDDERS IS A CORPORATION

STATE OF NEW YORK, COUNTY OF _____ ss:

_____ being duly sworn says:

I am the _____ of the above named corporation whose name is subscribed to and which executed the foregoing bid. I reside at _____

I have knowledge of the several matters therein stated, and they are in all respects true.

(Signature of Corporate Officer who signed the Bid)

Subscribed and sworn to before me this
_____ day of _____,

Notary Public

AFFIRMATION

The undersigned bidder affirms and declares that said bidder is not in arrears to the City of New York upon debt, contract or taxes and is not a defaulter, as surety or otherwise, upon obligation to the City of New York, and has not been declared not responsible, or disqualified, by any agency of the City of New York, nor is there any proceeding pending relating to the responsibility or qualification of the bidder to receive public contracts except _____

(If none, the bidder shall insert the word "None" in the space provided above.)

Full Name of Bidder: _____
Address: _____
City: _____ State: _____ Zip Code: _____

CHECK ONE BOX AND INCLUDE APPROPRIATE NUMBER:

- A - Individual or Sole Proprietorship *
SOCIAL SECURITY NUMBER

- B - Partnership, Joint Venture or other unincorporated organization
EMPLOYER IDENTIFICATION NUMBER

- C - Corporation
EMPLOYER IDENTIFICATION NUMBER

By: _____
Signature: _____

Title: _____

If a corporation, place seal here

This affirmation must be signed by an officer or duly authorized representative.

* Under the Federal Privacy Act the furnishing of Social Security Numbers by bidders on City contracts is voluntary. Failure to provide a Social Security Number will not result in a bidder's disqualification. Social Security Numbers will be used to identify bidders, proposers or vendors to ensure their compliance with laws, to assist the City in enforcement of laws, as well as to provide the City a means of identifying of businesses which seek City contracts.

BIDDER'S IDENTIFICATION OF SUBCONTRACTORS

NOTICE TO BIDDERS

SUBMISSION: The Bidder must, at the time of the bid, submit the completed form on the next page ("BIDDER'S IDENTIFICATION OF SUBCONTRACTORS"). This form must be submitted in a separate, sealed envelope (BID ENVELOPE #2). Failure to do so will result in the disqualification of the bid as non-responsive.

Please be advised that pursuant to GML § 101(5) the Bidder is required to submit with its bid the names of subcontractors it intends to use to perform the following work on this contract, as well as the agreed-upon amount to be paid to each:

- plumbing and gas fitting;
- steam heating, hot water heating, ventilating and air conditioning apparatus; and
- electric wiring and standard illuminating fixtures.

NOTE: This project may not involve all of the above listed subcontractors. Please see the form on the next page which indicates the subcontractors required for this Project.

All listed subcontractors must be used to perform the work identified on this form for the amount listed. The listed subcontractors are not alternatives to each other. The list of subcontractors is to be submitted in a separate sealed envelope by completing the form 'Bidders Identification of Subcontractors' for any subcontractors intended to be used in any of the three trades listed above. If bidder intends to use its own forces for any of the above listed work, bidder should complete this form using its own name.

Failure to submit the completed form on the next page ("Bidder's Identification of Subcontractors") that includes the names of subcontractors and the agreed upon amounts to be paid to such subcontractors will render the bid non-responsive.

PLEASE NOTE: for any contract that is subject to M/WBE Participation Goals under Local Law 129, if the bidder's intention to use its own forces to do any of the above-referenced work would result in Bidder's failure to attain the Target Subcontracting Percentage identified in Schedule B (Subcontractor Utilization Plan), the bid will be non-responsive unless the bidder requests and obtains a Waiver of Target Subcontracting Percentage (Schedule B, Part III) in advance of bid submission. Failure to submit the completed 'BIDDERS IDENTIFICATION OF SUBCONTRACTORS' form that includes the names of subcontractors and the agreed upon amounts to be paid to such subcontractors will render the bid non-responsive.

After the low bid is announced, the sealed list submitted by the low bidder will be opened and the names of the subcontractors will be announced. The sealed lists of subcontractors submitted by all other bidders shall be maintained by the Agency unopened unless such bidder shall become the low bidder (e.g., the initial low bidder is found non-responsive). All unopened lists of subcontractors shall be returned to the bidders unopened after contract award, unless the bidder has given the agency permission to shred the form.

After bid submission, any change of subcontractor or agreed-upon amount to be paid to each shall require approval of the Agency upon a showing of a legitimate construction need which shall include, but not be limited to, a change in project specifications, a change in project material costs, a change to subcontractor status as determined pursuant to §222 (2)(e) of the Labor Law, or if the subcontractor has become otherwise unwilling, unable or unavailable to perform the subcontract.

Please note that the Agency will not award this contract for an amount greater than \$3 million.

BIDDER'S IDENTIFICATION OF SUBCONTRACTORS

Project ID: PV181HSA2

SUBMISSION: In addition to its Bid (Bid Envelope # 1), the Bidder must, at the time of the bid, complete and submit this form in a separate, sealed envelope (Bid Envelope # 2). To complete this form, the Bidder must identify the subcontractors it intends to use for the work listed below, as well as the dollar amount to be paid to each subcontractor. Failure to complete this form and submit it in a separate, sealed envelope will result in the disqualification of the bid as non-responsive.

The Bidder intends to use the following subcontractors. If the Bidder intends to do any of the work referenced below with its own forces, the Bidder should complete this form using its own name. If multiple subcontractors for any trade are proposed, Bidder may submit multiple copies of this form.

1. PLUMBING CONTRACTOR:

Description of Plumbing Work:

(Print Name)

Agreed amount to be paid Subcontractor: \$ _____

2. HVAC CONTRACTOR:

Description of HVAC Work:

(Print Name)

Agreed amount to be paid Subcontractor: \$ _____

3. ELECTRICAL CONTRACTOR:

Description of Electrical Work:

(Print Name)

Agreed amount to be paid Subcontractor: \$ _____

BIDDER'S SIGNATURE: The Bidder must sign and complete this form in the spaces provided below:

(Bidder's Signature)

(Print Name)

(Address)

(Title)

(Phone #)

(Fax#)

(Date)

BID BOND 1
FORM OF BID BOND

KNOW ALL MEN BY THESE PRESENTS. That we, _____

hereinafter referred to as the "Principal", and _____

hereinafter referred to as the "Surety" are held and firmly bound to THE CITY OF NEW YORK, hereinafter referred to as the "CITY", or to its successors and assigns in the penal sum of _____

(\$ _____), Dollars lawful money of the United States, for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Whereas, the Principal is about to submit (or has submitted) to the City the accompanying proposal, hereby made a part hereof, to enter into a contract in writing for _____

NOW, THEREFORE, the conditions of this obligation are such that if the Principal shall not withdraw said Proposal without the consent of the City for a period of forty-five (45) days after the opening of bids and in the event of acceptance of the Principal's Proposal by the City, if the Principal shall:

(a) Within ten (10) days after notification by the City, execute in quadruplicate and deliver to the City all the executed counterparts of the Contract in the form set forth in the Contract Documents, in accordance with the proposal as accepted, and

(b) Furnish a performance bond and separate payment bond, as may be required by the City, for the faithful performance and proper fulfillment of such Contract, which bonds shall be satisfactory in all respects to the City and shall be executed by good and sufficient sureties, and

(c) In all respects perform the agreement created by the acceptance of said Proposal as provided in the Information for Bidders, bound herewith and made a part hereof, or if the City shall reject the aforesaid Proposal, then this obligation shall be null and void; otherwise to remain in full force and effect.

BID BOND 2

In the event that the Proposal of the Principal shall be accepted and the Contract be awarded to him the Surety hereunder agrees subject only to the payment by the Principal of the premium therefore, if requested by the City, to write the aforementioned performance and payment bonds in the form set forth in the Contract Documents.

It is expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

There shall be no liability under this bond if, in the event of the acceptance of the Principal's Proposal by the City, either a performance bond or payment bond, or both, shall not be required by the City on or before the 30th day after the date on which the City signs the Contract.

The surety, for the value received, hereby stipulates and agrees that the obligations of the Surety and its bond shall in no way be impaired or affected by any postponements of the date upon which the City will receive or open bids, or by any extensions of time within which the City may accept the Principal's Proposal, or by any waiver by the City of any of the requirements of the Information for Bidders, and the Surety hereby waives notice of any such postponements, extensions, or waivers.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers the _____ day of _____, _____.

(Seal)

Principal (L.S.)

By: _____

(Seal)

Surety

By: _____

BID BOND 3

ACKNOWLEDGEMENT OF PRINCIPAL, IF A CORPORATION

State of _____ County of _____ ss:
On this _____ day of _____, _____, before me personally came _____ to me known, who, being by me duly sworn, did depose and say that he resides at _____ that he is the _____ of _____ the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.

Notary Public

ACKNOWLEDGEMENT OF PRINCIPAL, IF A PARTNERSHIP

State of _____ County of _____ ss:
On this _____ day of _____, _____, before me personally appeared _____ to me known and known to me to be one of the members of the firm of _____ described in and who executed the foregoing instrument, and he acknowledged to me that he executed the same as and for the act and deed of said firm.

Notary Public

ACKNOWLEDGEMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____ County of _____ ss:
On this _____ day of _____, _____, before me personally appeared _____ to me known and known to me to be the person described in and who executed the foregoing instrument and acknowledged that he executed the same.

Notary Public

AFFIX ACKNOWLEDGEMENTS AND JUSTIFICATION OF SURETIES

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BID BREAKDOWN

Submission: Bidders are advised that the requirement to submit a Bid Breakdown applies to each contract for which an "X" is indicated before the word "Yes". If required, the bidder must submit, with its bid, a completed Bid Breakdown. Failure to provide a completed Bid Breakdown may result in rejection of the bid as non-responsive.

YES NO

Limitations on Use of Bid Breakdown:

Bidders are advised that the Bid Breakdown shall be used for bid analysis purposes only and shall not be binding for any other purposes under the Contract, including, without limitation, for payment purposes or in connection with a contractor claim for extra work. If the form for the Bid Breakdown does not include an item of work required by the Contract Documents, such omission shall have no effect whatsoever, nor shall it be used by the contractor in connection with a claim for extra work (i.e., work for which the contractor is entitled to a change order).

Instructions for Preparing Bid Breakdown:

- (A) The Bid Breakdown is set forth on the following pages of this Bid Booklet and is in accordance with the Construction Specification Institute (CSI) format. For all items of work listed in the Bid Breakdown, the bidder must indicate the price for labor and the price for material, as well as the estimated quantities required.
- (B) In preparing its Bid Breakdown, the bidder shall submit prices that include all costs for overhead and profit. Overhead shall include, without limitation, all costs in connection with the following: administration, management, superintendence, small tools, insurance, bonds, and provision of services or items required by the General Conditions [except for Security/Fire Guard Services and Temporary Heat]. If the Project requires Security/Fire Guard Services and/or Temporary Heat, such service(s) will be included as separate line items in the Bid Breakdown.
- (C) If an item is set forth in the Bid Breakdown, but is not included in the Contract Documents (Drawings, Specifications, General Conditions, and/or Addenda), the bidder is advised to leave the item blank and exclude the cost of the item from its grand total. In an attachment to its Bid Breakdown, the bidder shall provide a list of all items left blank.
- (D) If an item is not set forth in the Bid Breakdown, but is included in the Contract Documents (Drawings, Specifications, General Conditions, and/or Addenda), the bidder is advised to add the item to its Bid Breakdown and include the cost of the item in its grand total. In an attachment to its Bid Breakdown, the bidder shall provide a list of all items added.

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Harlem School of the Arts, Phase II Building Renovations

Location: 645 St. Nicholas Avenue, NY NY 10031

Bidder:

DDC ID: PV181HSA2

Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
CONTRACT 1 - GENERAL CONSTRUCTION WORK								
Division 1	GENERAL REQUIREMENTS							
010000	Mobilization		LS					
	Subtotal							
011010	Summary of Work (Included w/ General Conditions)							
Division 2	EXISTING CONDITIONS							
024119	Selective Removals & Demolition							
	Exterior Ramp and Stairs		SF					
	Interior Stairs with handrail		SF					
	Sawcut floor and roof openings		SF					
	CMU block & brick wall		SF					
	Gypsum Board		SF					
	Double Doors and Frames		EA					
	Single Doors and Frames		EA					
	Skylight		LS					
	Miscellaneous Demolition							
	Mechanical Demolition							
	Remove Existing Multi-Zone AHU Unit		EA					
	Remove Existing Ductwork and Accessories		LS					
	Remove Existing HW Piping		LS					
	Remove Existing Controls		LS					
	Garbage Removal, Rental and Carting		LS					
	Handling All Materials (SCAFF, ACT, GWB)		LS					

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Project: Harlem School of the Arts, Phase II Building Renovations

Location: 645 St. Nicholas Avenue, NY NY 10031

Bidder:

CONTRACT 1 - General Construction

DDC ID: PV181HSA2

Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Plumbing Demolition		LS					
	Plumbing demolition		LS					
	Misc Plumbing demolition							
	Subtotal							
Division 3	CONCRETE							
033000	Cast-In-Place Concrete							
	Exterior concrete ramp		LF					
	Exterior concrete stairs and landing		SF					
	Interior concrete stairs		CY					
	Elevator wall foundation and pit		CY					
	Underpinning		LS					
	Subtotal							
Division 4	MASONRY							
042000	Unit Masonry							
	CMU Elevator shaft		SF					
	Subtotal							
Division 5	WOOD, PLASTICS, AND COMPOSITES							
051200	Structural Steel							
	W8x15		LF					
	W12x26		LF					
	Struct. Steel for Acoust. Panel Supports, Incl. Painting		LBS					
	Subtotal							
053100	Fluted Steel Deck							
	Metal Deck		SF					
	Subtotal							

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

CONTRACT 10181HSA2 - GENERAL CONSTRUCTION

CONTRACT 1 - General Construction

Project: Harlem School of the Arts, Phase II Building Renovations

Location: 645 St. Nicholas Avenue, NY NY 10031

Bidder:

DDC ID: PV181HSA2

Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
055000	Metal Fabrications							
	Railings and Handrails (exterior, SS)		LF					
	Railings and Handrails (Galv)		LF					
	Misc. Steel, Angles, Bolts, Etc		LS					
	Subtotal							
Division 6	WOOD, PLASTICS, AND COMPOSITES							
061053	Wood Nailers and Blocking							
	Wood Nailers and Blocking		LS					
	Wood Nailers & Blockings (for Acoustical Panel Sys.)		LS					
	Subtotal							
Division 7	THERMAL AND MOISTURE PROTECTION							
070150	Maintenance of Membrane Roofing (Included w/ 075100)							
071613	Cementitious Waterproofing							
	Cementitious Waterproofing		SF					
	Subtotal							
075100	Built-Up Bituminous Roofing							
	Built-Up Bituminous Roofing		SF					
	Built-up Bituminous Roofing @ Each Curb-for Acoustical Panel Sys.		EA					
	Subtotal							
076100	Flashing and Sheetmetal							
	Flashing and Sheetmetal		LS					
	Flashing and Sheet Metal (at Roof Curbs for Acoustical Pnl Sys.)		EA					
	Subtotal							

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Harlem School of the Arts, Phase II Building Renovations

Location: 645 St. Nicholas Avenue, NY NY 10031

Bidder: _____

DDC ID: PV181HSA2

Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
078400	Firestopping/ Smoke Seals		LS					
	Firestopping/ Smoke Seals							
	Subtotal							
079200	Joint Sealers		LS					
	Joint Sealers		SF					
	Joint Sealers (for for Acoustical Panel Sys.)							
	Subtotal							
Division 8	OPENINGS							
081102	Steel Doors and Frames		EA					
	Interior single doors		EA					
	Interior double doors		EA					
	Interior frame 6'-0"x7'-0"H		EA					
	Interior frame 3'-0"x7'-0"H		EA					
	Roll up door		EA					
	Subtotal							
081116	Aluminum Doors and Frames							
	Exterior entrance doors, Glazed		EA					
	Exterior entrance frame		EA					
	Subtotal							
085123	Steel Windows (Included w/ 088100)							
087100	Finish Hardware		SET					
	Finish Hardware							
	Subtotal							
088100	Glass and Glazing							
	Glass and Glazing		SF					
	Subtotal							

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Project: Harlem School of the Arts, Phase II Building Renovations
Location: 645 St. Nicholas Avenue, NY NY 10031
Bidder:

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

DDC ID: PV181HSA2

Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
089100	Stationary Metal Wall Louvers							
	Stationary Metal Wall Louvers		EA					
	Subtotal							
Division 9	FINISHES							
092116	Gypsum Board Assemblies							
	Gypsum Board Assemblies		SF					
	Subtotal							
092214	Furring for Gypsum Board Ceilings (Included w/ 092116)							
093013	Ceramic Tile							
	Ceramic Tile		SF					
	Cove Base 4 1/4x4 1/4		LF					
	Subtotal							
095300	Suspended Acoustical Ceiling System							
	Suspended Acoustical Ceiling System		SF					
	Subtotal							
096519	Resilient Flooring							
	Porcelain Floor Tiles		SF					
	Subtotal							
099000	Painting							
	Painting		SF					
	Subtotal							

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Harlem School of the Arts, Phase II Building Renovations

Location: 645 St. Nicholas Avenue, NY NY 10031

Bidder:

DDC ID: PV181HSA2

Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
Division 10	SPECIALTIES							
102113	Metal Toilet Compartments		EA					
	Metal Toilet Compartments							
	Subtotal							
102813	Toilet and Bath Accessories		LS					
	Toilet and Bath Accessories							
	Subtotal							
Division 13	SPECIAL CONSTRUCTION							
134813	Acoustical Panel Systems		SF					
	Acoustical Panels, 12' Hot Dip Galv. 3 lb/sf Fill							
	Subtotal							
Division 14	CONVEYING EQUIPMENT							
142420	Hydraulic Vertical Platform Lift							
	Platform Vertical Lift (Based on Savaria V1504, type 2), pitless 36"X54", 750 Lbs, 21" travel/ with built in control, 3" ramp		LS					
	Electrical Material (Cab)		LS					
	Subtotal							
142423	Hydraulic Passenger Elevator							
	Controller		LS					
	Power Unit		LS					
	Holeless Jack Assembly		LS					
	Landing/Leveling System		LS					
	Cab Platform		LS					
	Cab Enclosure		LS					
	Car Door Sill (2)		LS					
	Cab Flooring		LS					
	Guides		LS					

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Project: Harlem School of the Arts, Phase II Building Renovations

Location: 645 St. Nicholas Avenue, NY NY 10031

Bidder:

CONTRACTOR'S BILL BREAKDOWN FORM

CONTRACT 1 - General Construction

DDC ID: PV181HSA2

Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Car Door Operator & Clutch (2)		LS					
	Car Door Track and Hangers (2 sets)		LS					
	Car Door Protection Infrared Beam (2)		LS					
	Car Pushbutton Station		LS					
	Car Travel Lantern (2)		LS					
	Car Position Indicator		LS					
	Emergency Communication System		LS					
	Top of Car Inspection Box		LS					
	Hall Push Buttons w/Position Indicators (3)		LS					
	Hall Door Entrances Complete (3)		LS					
	Hoistway Limit Switches (Top & Bottom)		LS					
	Pit Stop Switch		LS					
	Traveling Cable		LS					
	Electrical Material (Hoistway)		LS					
	Electrical Material (Motor Room)		LS					
	Electrical Material (Cab)		LS					
	Pit Steel & Buffers		LS					
	Pit Ladder		LS					
	Scavenger Pump		LS					
	Adjusting and Testing		LS					
	Miscellaneous Elevator Work		LS					
	Subtotal							
Division 21	FIRE PROTECTION							
210301	General Provisions for Fire Protection Systems Work (Included w/ 211313)							
211313	Sprinkler Systems							
	SPRINKLER PIPING w/S FITTINGS & HANGERS							
	1" PIPE		FT					
	1-1/4" PIPE		FT					

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

CONTRACT 1 - General Construction

Project: Harlem School of the Arts, Phase II Building Renovations

Location: 645 St. Nicholas Avenue, NY NY 10031

Bidder:

DDC ID: PV181HSA2

Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	1-1/2" PIPE		FT					
	2" PIPE		FT					
	2-1/2" PIPE		FT					
	3" PIPE		FT					
	SPRINKLER HEADS		EA					
	WATER FLOW SWITCH		EA					
	TAMPER SWITCH		EA					
	TESTING		EA					
	RIGGING		EA					
	MISC		EA					
			LS					
	Subtotal							
Division 22	PLUMBING							
220401	General Provisions for Plumbing Work (Included w/ 220523, 220800, 221100)							
220410	Plumbing Piping							
	3" STORM - BELL & SPIGOT W/ TRENCH/BACKFILL		LF					
	4" STORM PIPING - NO-HUB C.I. W/ FITTINGS & HANGERS		LF					
	1-1/2" C.I. SANITARY/VENT PIPING - NO-HUB		LF					
	1/2" COPPER PIPING - TYPE L -WATER		LF					
	3/4" COPPER PIPING - TYPE L -WATER		LF					
	1" COPPER PIPING - TYPE L -WATER		LF					
	1-1/4" COPPER PIPING - TYPE L -WATER		LF					
	1-1/2" COPPER PIPING - TYPE L -WATER		LF					
	2" COPPER PIPING - TYPE L -WATER		LF					
	1" N. GAS - SCH. 40 W/ FITTINGS & HANGERS		LF					
	1-1/2" N. GAS - SCH. 40 W/ FITTINGS & HANGERS		LF					
	2" N. GAS - SCH. 40 W/ FITTINGS & HANGERS		LF					
	3" N. GAS - SCH. 40 W/ FITTINGS & HANGERS		LF					
	4" N. GAS - SCH. 40 W/ FITTINGS & HANGERS		LF					
	6" N. GAS - SCH. 40 W/ FITTINGS & HANGERS		LF					

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Project: Harlem School of the Arts, Phase II Building Renovations
 Location: 645 St. Nicholas Avenue, NY NY 10031
 Bidder:

CONFIDENTIAL - NOT FOR RELEASE TO THE PUBLIC

CONTRACT 1 - General Construction

DDC ID: PV181HSA2
 Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	PLUMBING PIPING w/ FITTINGS, HANGERS							
	4" C.I. SANITARY PIPING - NO-HUB		LF					
	3" C.I. SANITARY PIPING - NO-HUB		LF					
	2" C.I. SANITARY/VENT PIPING - NO-HUB		LF					
	1-1/2" C.I. SANITARY/VENT PIPING - NO-HUB		LF					
	1/2" COPPER PIPING - TYPE L -WATER		LF					
	3/4" COPPER PIPING - TYPE L -WATER		LF					
	1" COPPER PIPING - TYPE L -WATER		LF					
	1-1/4" COPPER PIPING - TYPE L -WATER		LF					
	RIGGING		LS					
	Subtotal							
220424	Backflow Preventors		EA					
	Backflow Preventors		EA					
	RPZ WATTS 009 M3QT ASSBLY-1"		EA					
	Subtotal							
220519	Cold Water Meters (Included w/ 220523, 220800, 221100)							
220523	Valves							
	1/2" BALL VALVE		EA					
	3/4" BALL VALVE		EA					
	1" BALL VALVE		EA					
	1-1/2" BALL VALVE		EA					
	2" BALL VALVE		EA					
	1" PLUG VALVE		EA					
	1-1/2" PLUG VALVE		EA					
	2" PLUG VALVE		EA					
	1" BALANCING VALVE		EA					
	Subtotal							

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

CONTRACTORS BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Harlem School of the Arts, Phase II Building Renovations

Location: 645 St. Nicholas Avenue, NY NY 10031

Bidder:

DDC ID: PV181HSA2

Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
220529	Pipe Hangers and Supports (Included w/ 220410)							
220553	Pipe and Valve Identification Pipe and Valve Identification		LS					
	Subtotal							
220576	Drainage Accessories Drainage Accessories		LS					
	Subtotal							
220577	Floor and Area Drains Floor and Area Drains Area Drains Trench Drains Relocation of Roof Drain		LS EA EA EA					
	Subtotal							
220700	Piping Insulation Piping Insulation		LS					
	Subtotal							
220800	Cleaning and Testing Cleaning and Testing		LS					
	Subtotal							
221116	Vacuum Breakers (Included w/ 220410)							

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Project: Harlem School of the Arts, Phase II Building Renovations
Location: 645 St. Nicholas Avenue, NY NY 10031
Bidder:

CONTRACT 1 - General Construction

DDC ID: PV181HSA2
Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
221119	Water Supply Accessories Water Supply Accessories		LS					
	Subtotal							
221122	Thermometers and Gages Thermometers and Gages		LS					
	Subtotal							
221123	Gas Piping System (Included w/ 220410)							
221429	Sump Pump Submersible ELEVATOR SUMP PUMP- 1/3HP, 10 GPM @20'TD/H		EA					
	Subtotal							
223301	Domestic Water Heater 98 GAL., 90 MBH Gas Firing, with piping		EA					
	Subtotal							
224200	Plumbing Fixtures WATER CLOSETS w/ CARRIER, FLUSH VALVE, ETC. URINALS w/ CARRIER, FLUSH VALVE LAVATORIES w/ SUPPORTS, FAUCET, DRAIN, ETC. SHOWERS FLOOR DRAINS		EA EA EA EA EA					
	Subtotal							
224453	Pumps RE-CIRC PUMP		EA					
	Subtotal							
Division 23	HVAC							
230501	Basic Heating, Ventilation and Air-Conditioning Requirements (Included w/ 230593, 230594) Temporary Heat		LS					
	Subtotal							

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Project: Harlem School of the Arts, Phase II Building Renovations
Location: 645 St. Nicholas Avenue, NY NY 10031
Bidder:

CONTRACTORS BIDDING AGREEMENT

CONTRACT 1 - General Construction

DDC ID: PV181HSA2

Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
230503	HVAC Piping							
	1" PIPE		LF					
	2" PIPE		LF					
	3" PIPE (COPPER)		LF					
	FITTINGS		LS					
	Subtotal							
230523	Valves (HVAC)							
	3" BALL VALVES		EA					
	3" BALLANCING VALVES		EA					
	1" BALL VALVES		EA					
	2" BALL VALVES		EA					
	Subtotal							
230549	Vibration Isolation							
	SPRING TYPE VIBRATION ISOLATORS		EA					
	NEOPRENE PADS		EA					
	Subtotal							
230553	HVAC Identification							
	HVAC Identification		LS					
	Subtotal							
230593	Cleaning and Testing							
	CLEANING AND TESTING		LS					
	DUCT CLEANING		LS					
	CLEANING & GARBAGE REMOVAL		LS					
	RIGGING		LS					
	MISCELLANEOUS		LS					
	Subtotal							

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Project: Harlem School of the Arts, Phase II Building Renovations

Location: 645 St. Nicholas Avenue, NY NY 10031

Bidder:

CONTRACT 1 - General Construction

DDC ID: PV181HSA2

Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
230594	Balancing of Systems		LS					
	Balancing of Systems							
	Subtotal							
230701	Piping Insulation							
	1" PIPE INSULATION		LF					
	2" PIPE INSULATION		LF					
	3" PIPE INSULATION		LF					
	Subtotal							
230702	Equipment Insulation (Included w/ 235100, 235224)							
230703	Ductwork Insulation							
	Ductwork Insulation		SF					
	Subtotal							
230923	TCS with Web-Based Building Management							
	TEMPERATURE SENSORS		EA					
	HVAC CONTROLS - CONTROLLER		EA					
	HVAC CONTROLS - LOW VOLTAGE		LS					
	HVAC CONTROLS - BMS		LS					
	INSTRUMENTATIONS AND CONTROLS		LS					
	WALL REPAIR, TOUCH-UP PAINTING		LS					
	Subtotal							
230993	Sequence of Operations (Included w/ 230923)							
232003	Thermometers and Gages							
	Thermometers and Gages		LS					
	Subtotal							

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Project: Harlem School of the Arts, Phase II Building Renovations
Location: 645 St. Nicholas Avenue, NY NY 10031

Bidder:

CONTRACT 1 - General Construction

DDC ID: PV181HSA2

Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
232116	Hydronic Specialties AIR SEPARATOR		EA					
	AIR VENT (HIGH CAPACITY)		EA					
	EXPANSION TANK		EA					
	Subtotal							
232123	Hydronic Pumps Hydronic Pumps		EA					
	Subtotal							
232500	Water Treatment - HVAC CHEMICAL FEEDER		EA					
	Subtotal							
233113	Metal Ductwork Metal Ductwork		LBS					
	Subtotal							
233300	Ductwork Accessories Ductwork Accessories		LS					
	Subtotal							
233313	Dampers VOLUME DAMPERS		EA					
	COMBUSTION DAMPER		EA					
	FSD		EA					
	Subtotal							
233400	Centrifugal Fans Centrifugal Fans		EA					
	VARIABLE AIR TERMINALS (VAV BOXES)		EA					
	Subtotal							

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Project: Harlem School of the Arts, Phase II Building Renovations
Location: 645 St. Nicholas Avenue, NY NY 10031
Bidder:

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CONTRACT 1 - General Construction

DDC ID: PV181HSA2
Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
235100	Breeching, Chimneys and Stacks Breeching, Chimneys and Stacks		EA					
	Subtotal							
235201	Boiler Accessories (Included w/ 235223)							
235223	Cast Iron Boilers cast Iron Boilers		EA					
	Subtotal							
235224	Fuel Burning Equipment (for Hot Water Boilers) (Included w/ 235223)							
236313	Air Cooled Condensing Units Air Cooled Condensing Units		EA					
	Subtotal							
237313	Air Handling Units AIR HANDLING UNIT (Elev.Mach Rm)		EA					
	Subtotal							
238106	Commercial Packaged Rooftop Heating and Cooling Units GAS-FIRED ROOFTOP UNITS (FOR VAV, WITH VFD)		EA					
	Subtotal							
Division 26	ELECTRICAL							
260501	General Provisions for Electrical Work TEMPORARY ELECTRIC & LIGHTING		LS					

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Project: Harlem School of the Arts, Phase II Building Renovations
Location: 645 St. Nicholas Avenue, NY NY 10031
Bidder:

CONTRACT 1 - General Construction

DDC ID: PV181HSA2
Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	DISCONNECT FOR REMOVAL AC2/3/4/5		LS					
	DISCONNECT FOR REMOVAL P1/2/3 & BLOWER		LS					
	REMOVE MISC ELECTRICAL		LS					
	Subtotal							
260522	Wiring Systems							
	POWER WIRING & CONDUITS		LS					
	FINAL TERMINATIONS AND CONNECTIONS		LS					
	WALL SWITCH		LS					
	GFI RECEPTACLES		EA					
	Subtotal							
260523	Elevator Wiring (Included w/ 260522)							
260526	Grounding and Bonding (Included w/ 260522)							
260533	Raceways and Boxes for Electrical System (Included w/ 260522)							
262416	Panelboards							
	BREAKER PANELBOARD		EA					
	CIRCUIT BREAKER		LS					
	Subtotal							
262419	Motors, Starters and Control Equipment							
	COMBINATION MOTOR STARTER		LS					
	VFD INSTALLATION		LS					
	Subtotal							

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Project: Harlem School of the Arts, Phase II Building Renovations
Location: 645 St. Nicholas Avenue, NY NY 10031
Bidder:

CONTRACT 1 - General Construction

DDC ID: PV181HSA2
Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
262812	Safety Switches SAFETY DISCONNECT SWITCH NEMA 3R NONFUSE 600A 400A 200A 60A		EA EA EA EA					
	SAFETY DISCONNECT SWITCH NEMA 12 FUSED 200 A 60A FUSES		EA EA EA					
	Subtotal							
265190	Interior Building Lighting INTERIOR LIGHTING (BATHROOM LIGHTING)		EA					
	Subtotal							
265192	Lamps, Ballasts and Accessories LAMPS, BALLASTS AND ACCESS.(LED BULBS)		EA					
	Subtotal							
Division 28	ELECTRONIC SAFETY AND SECURITY							
283101	Fire Detection and Alarm System FIRE ALARM CONNECTIONS AND REPROGRAMING Addressable Smoke Detector Addressable Heat Detector New strobes Interface devices W/Remote indicator Duct Smoke Detectors/ with modules		LS EA EA EA EA EA					

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Construction Services Bid - E&A&D&W&P&M

Project: Harlem School of the Arts, Phase II Building Renovations
Location: 645 St. Nicholas Avenue, NY NY 10031
Bidder:

CONTRACT 1 - General Construction

DDC ID: PV181HSA2
Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Connections for HVAC shutdown		LS					
	Carbon Monoxide Monitor		EA					
	Elevator Recall Monitor		EA					
	Reprogramming W/Third Party Monitoring		LS					
	Back Boxes, Splicing		LS					
	Scaffold rental, covers, setup and tare-down		LS					
	FDNY Testing		HR					
	Cable-Fire rated Device gage		LF					
	Cable-Fire rated Alarm gage		LF					
	EMT-3/4"		LF					
	APPLY FOR PERMITS		LS					
	Miscellaneous Material		LS					
	Hardware, Mounting supports		LS					
	Subtotal							
Division 31	EARTHWORK							
310000	Earthwork (Included w/ 033000)							
312343	EPS Geofoam (Included w/ 033000)							
TOTAL CONTRACT 1 - GENERAL CONSTRUCTION WORK								

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ATTACHMENT 1 - BID INFORMATION
PROJECT ID: PV181HSA2

DESCRIPTION AND LOCATION OF WORK:

Harlem School of the Arts Phase II Building Renovations
 645 St. Nicholas Avenue,
 New York, NY 10030
 E-PIN: 85015B0170 / DDC PIN: 8502015PV0018C

DOCUMENTS AVAILABLE AT:

Department of Design and Construction, Contract Section
 30-30 Thomson Avenue - First Floor, Long Island City, NY 11101

SUBMISSION OF BIDS BEFORE BID OPENING:**TIME TO SUBMIT:**

On or Before: **WEDNESDAY, NOVEMBER 18, 2015**

BIDS MUST BE CLOCKED IN PRIOR TO BID OPENING

PLACE TO SUBMIT:

Department of Design and Construction, Contract Section (located behind Security Desk)
 30-30 Thomson Avenue - First Floor, Long Island City, NY 11101

BID OPENING:

PLACE OF BID OPENING:	Department of Design and Construction Contract Section 30-30 Thomson Avenue - First Floor Long Island City, NY 11101
DATE AND HOUR:	WEDNESDAY, NOVEMBER 18, 2015 AT 2:00 PM
	LATE BIDS WILL NOT BE ACCEPTED

PRE-BID WALK-THRU AND CONFERENCE:

PLACE	Harlem School of the Arts 645 St. Nicholas Avenue, Room 232 New York, NY 10030
DATE AND HOUR	WEDNESDAY, OCTOBER 28, 2015 AT 10:00 AM
MANDATORY OR OPTIONAL	OPTIONAL

BID SECURITY:

Bid Security is required in the amount set forth below; provided, however, bid security is not required if the TOTAL BID PRICE set forth on the Bid Form is less than \$1,000,000.

- (1) Bond in an amount not less than 10% of the TOTAL BID PRICE set forth on the Bid Form, OR
- (2) Certified Check in an amount not less than 2% of the TOTAL BID PRICE set forth on the Bid Form

PERFORMANCE AND PAYMENT SECURITY:

Required for Contracts in the amount of \$1,000,000.00 or more. Performance and Payment Security shall each be in an amount equal to 100% of the Contract Price

AGENCY CONTACT PERSON:

Lorraine Holley, 30-30 Thomson Avenue - First Floor, Long Island City, Queens, NY 11101
 Telephone (718) 391-3170 or (718) 391-1016 Fax: (718) 391-2615

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**BID BOOKLET
PART B**

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SAFETY QUESTIONNAIRE

The bidder must include, with its bid, all information requested on this Safety Questionnaire. Failure to provide a completed and signed Safety Questionnaire at the time of bid opening may result in disqualification of the bid as non-responsive.

1. Bidder Information:

Company Name: _____

DDC Project Number: _____

Company Size: _____ Ten (10) employees or less
 _____ Greater than ten (10) employees

Company has previously worked for DDC _____ YES _____ NO

2. Type(s) of Construction Work

TYPE OF WORK	LAST 3 YEARS	THIS PROJECT
General Building Construction	_____	_____
Residential Building Construction	_____	_____
Nonresidential Building Construction	_____	_____
Heavy Construction, except building	_____	_____
Highway and Street Construction	_____	_____
Heavy Construction, except highways	_____	_____
Plumbing, Heating, HVAC	_____	_____
Painting and Paper Hanging	_____	_____
Electrical Work	_____	_____
Masonry, Stonework and Plastering	_____	_____
Carpentry and Floor Work	_____	_____
Roofing, Siding, and Sheet Metal	_____	_____
Concrete Work	_____	_____
Specialty Trade Contracting	_____	_____
Asbestos Abatement	_____	_____
Other (specify)	_____	_____

3. Experience Modification Rate:

The Experience Modification Rate (EMR) is a rating generated by the National Council of Compensation Insurance (NCCI). This rating is used to determine the contractor's premium for worker's compensation insurance. The contractor may obtain its EMR by contacting its insurance broker or the NCCI. If the contractor cannot obtain its EMR, it must submit a written explanation as to why.

The Contractor must indicate its Intrastate and Interstate EMR for the past three years. [Note: For contractors with less than three years of experience, the EMR will be considered to be 1.00].

YEAR	<u>INTRASTATE RATE</u>	<u>INTERSTATE RATE</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

If the Intrastate and/or Interstate EMR for any of the past three years is greater than 1.00, the contractor must attach, to this questionnaire, a written explanation for the rating and identify what corrective action was taken to correct the situation resulting in that rating.

4. OSHA Information:

___ YES ___ NO Contractor has received a willful violation issued by OSHA or New York City Department of Buildings (NYCDOB) within the last three years.

___ YES ___ NO Contractor has had an incident requiring OSHA notification within 8 hours (all work-related fatalities) or an incident requiring OSHA notification within 24 hours (all work-related impatient hospitalizations, all amputations and all losses of an eye).

The Occupational Safety and Health Act (OSHA) of 1970 requires employers with ten or more employees, on a yearly basis to complete and maintain on file the form entitled "Log of Work-related Injuries and Illnesses". This form is commonly referred to as the OSHA 300 Log (OSHA 200 Log for 2001 and earlier).

The OSHA 300 Log must be submitted for the last three years for contractors with more than ten employees.

The Contractor must indicate the total number of hours worked by its employees, as reflected in payroll records for the past three years.

The contractor must submit the Incident Rate for Lost Time Injuries (the Incident Rate) for the past three years. The Incident Rate is calculated in accordance with the formula set forth below. For each given year, the total number of incidents is the total number of non-fatal injuries and illnesses reported on the OSHA 300 Log. The 200,000 hours represents the equivalent of 100 employees working forty hours a week, fifty weeks per year.

Incident Rate =
$$\frac{\text{Total Number of Incidents} \times 200,000}{\text{Total Number of Hours Worked by Employees}}$$

YEAR TOTAL NUMBERS OF HOURS WORKED BY EMPLOYEES INCIDENT RATE

If the contractor's Incident Rate for any of the past three years is one point higher than the Incident Rate for the type of construction it performs (listed below), the contractor must attach, to this questionnaire, a written explanation for the relatively high rate.

General Building Construction	8.5
Residential Building Construction	7.0
Nonresidential Building Construction	10.2
Heavy Construction, except building	8.7
Highway and Street Construction	9.7
Heavy Construction, except highways	8.3
Plumbing, Heating, HVAC	11.3
Painting and Paper Hanging	6.9
Electrical Work	9.5
Masonry, Stonework and Plastering	10.5
Carpentry and Floor Work	12.2
Roofing, Siding, and Sheet Metal	10.3
Concrete Work	8.6
Specialty Trade Contracting	8.6

5. Safety Performance on Previous DDC Project(s)

YES NO Contractor previously audited by the DDC Office of Site Safety.

DDC Project Number(s): _____

YES NO Accident on previous DDC Project(s).

DDC Project Number(s): _____

YES NO Fatality or Life-altering Injury on DDC Project(s) within the last three years.
 [Examples of a life-altering injury include loss of limb, loss of a sense (e.g., sight, hearing), or loss of neurological function].

DDC Project Number(s): _____

Date: _____

By: _____
 (Signature of Owner, Partner, Corporate Officer)

Title: _____

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Pre-Award Process

The bidder is advised that as part of the pre-award review of its bid, it may be required to submit the information described in Sections (A) through (D) below. If required, the bidder must submit such information within five (5) business days following receipt of notification from DDC that it is among the low bidders. Such notification from DDC will be by facsimile or in writing and will specify the types of information which must be submitted.

In the event the bidder fails to submit the required information within the specified time frame, its bid may be rejected as nonresponsive.

- (A) **Project Reference Form:** If required, the bidder must complete and submit the Project Reference Form set forth on pages 28 through 30 of this Bid Booklet. The Project Reference Form consists of 3 parts: (1) Similar Contracts Completed by the Bidder, (2) Contracts Currently Under Construction by the Bidder, and (3) Pending Contracts Not Yet Started by the Bidder.
- (B) **Copy of License:** If required, the bidder must submit a copy of the license under which the bidder will be performing the work. Such license must clearly show the following: (1) Name of the Licensee, (2) License Number, and (3) Expiration date of the License. A copy of the license will be required from bidders for the following contracts: Plumbing Work, Electrical Work and Asbestos Abatement.
- (C) **Financial Information:** If required, the bidder must submit the financial information described below:
- (1) **Audited Financial Statements:** Financial statements (Balance Sheet and Income Statement) of the entity submitting the bid, as audited by an independent auditor licensed to practice as a certified public accountant (CPA). Audited financial statements for the three most recent fiscal years must be submitted. Each such financial statement must include the auditor's standard report.
- If the bidder does not have audited financial statements, it must submit an affidavit attesting to the fact that the bidder does not have such statements. In addition, the bidder must submit the following documentation covering the three most recent fiscal years: signed federal tax returns, unaudited financial statements, and a "certified review letter" from a certified public accountant (CPA) verifying the unaudited financial statements.
- Unless the most recent audited or unaudited financial statement was issued within ninety (90) days, the bidder must submit interim financial information that includes data on financial position and results of operation (income data) for the current fiscal year. Such information may be summarized on a monthly or quarterly basis or at other intervals.
- (2) **Schedule of Aged Accounts Receivable,** including portion due within ninety (90) days.
- (D) **Project Specific Information:** If required, the bidder must submit the project specific information described below:
- (1) **Statement indicating the number of years of experience the bidder has had and in what type of construction.**
- (2) **Resumes of all key personnel to be involved in the project, including the proposed project superintendent.**
- (3) **List of significant pieces of equipment expected to be used for the contract, and whether such equipment is owned or leased.**

- (4) Description of work expected to be subcontracted, and to what firms, if known.
- (5) List of key material suppliers.
- (6) Preliminary bar chart time schedule
- (7) Contractor's expected means of financing the project. This should be based on the assumption that the contractor is required to finance 2X average monthly billings throughout the contract period.
- (8) Any other issues the contractor sees as impacting his ability to complete the project according to the contract.

In addition to the information described in Sections (A) through (D) above, the bidder shall submit such additional information as the Commissioner may require, including without limitation, an explanation or justification for specific unit price items.

The bidder is further advised that it may be required to attend a pre-award meeting with DDC representatives. If such a meeting is convened, the bidder will be advised as to any additional material to be provided.

A. PROJECT REFERENCES – SIMILAR CONTRACTS COMPLETED BY THE BIDDER

List all contracts substantially completed within the last 4 years similar to the contract being awarded, up to a maximum of 10, in descending order of date of substantial completion.

Project & Location	Contract Type	Contract Amount (\$000)	Date Completed	Owner Reference & Tel. No.	Architect/Engineer Reference & Tel. No. if different from owner

B. PROJECT REFERENCES – CONTRACTS CURRENTLY UNDER CONSTRUCTION BY THE BIDDER

List all contracts currently under construction even if they are not similar to the contract being awarded.

Project & Location	Contract Type	Contract Amount (\$000)	Subcontracted to Others (\$000)	Uncompleted Portion (\$000)	Date Scheduled to Complete	Owner Reference & Tel. No.	Architect/Engineer Reference & Tel. No. if different from owner

C. PROJECT REFERENCES - PENDING CONTRACTS NOT YET STARTED BY THE BIDDER

List all contracts awarded to or won by the bidder but not yet started.

Project & Location	Contract Type	Contract Amount (\$000)	Date Scheduled to Start	Owner Reference & Tel. No.	Architect/Engineer Reference & Tel. No. if different from owner

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**OFFICE OF THE MAYOR
BUREAU OF LABOR SERVICES
CONTRACT CERTIFICATE**

To be completed if the contract is less than \$1,000,000

Contractor: _____

Address: _____

Telephone Number: _____

Name and Title of Signatory: _____

Contracting Agency or Owner: _____

Project Number: _____

Proposed Contract Amount: _____

Description and Address of Proposed Contract: _____

Names of Subcontractors in the amount of 750,000 or more on this contract (if not known at this time, so state indicating that trades will be subcontracted):

I, (fill in name of person signing) _____,
hereby affirm that I am authorized by the above-named contractor to certify that said contractor's proposed contract with the above-named owner or city agency is less than \$1,000,000. This affirmation is made in accordance with Executive Order No. 50 (1980) as amended and its implementing regulations.

Date

Signature

WILLFUL OR FRAUDULENT FALSIFICATION OF ANY DATA OR INFORMATION SUBMITTED HEREWITH MAY RESULT IN THE TERMINATION OF ANY CONTRACT BETWEEN THE CITY AND THE BIDDER OR CONTRACTOR AND BAR THE BIDDER OR CONTRACTOR FROM PARTICIPATION IN ANY CITY CONTRACT FOR A PERIOD OF UP TO THREE YEARS. FURTHER, SUCH FALSIFICATION MAY RESULT IN CRIMINAL PROSECUTION.

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VENDEX COMPLIANCE

(A) **Vendex Fees:** Pursuant to Procurement Policy Board Rule 2-08(f)(2), the contractor will be charged a fee for the administration of the VENDEX system, including the Vendor Name Check process, if a Vendor Name Check review is required to be conducted by the Department of Investigation. The contractor shall also be required to pay the applicable required fees for any of its subcontractors for which Vendor Name Check reviews are required. The fee(s) will be deducted from payments made to the contractor under the contract. For contracts with an estimated value of less than or equal to \$1,000,000, the fee will be \$175 per Vendor Name Check review. For contracts with an estimated value of greater than \$1,000,000, the fee will be \$350 per Vendor Name Check review.

(B) **Confirmation of Vendex Compliance:** The Bidder shall submit this Confirmation of Vendex Compliance to the Department of Design and Construction, Contracts Section, 30-30 Thomson Avenue – First Floor, Long Island City, NY 11101.

Bid Information: The Bidder shall complete the bid information set forth below.

Name of Bidder: _____
Bidder's Address: _____
Bidder's Telephone Number: _____
Bidder's Fax Number: _____
Date of Bid Opening: _____
Project ID: _____

Vendex Compliance: To demonstrate compliance with Vendex requirements, the Bidder shall complete either Section (1) or Section (2) below, whichever applies.

(1) **Submission of Vendex Questionnaires to MOCS:** By signing in the space provided below, the Bidder certifies that as of the date specified below, the Bidder has submitted Vendex Questionnaires to the Mayor's Office of Contract Services, Attn: VENDEX, 253 Broadway, 9th Floor, New York, New York 10007.

Date of Submission: _____

By: _____
(Signature of Partner or corporate officer)

Print Name: _____

(2) **Submission of Certification of No Change to DDC:** By signing in the space provided below, the Bidder certifies that it has read the instructions in a "Vendor's Guide to Vendex" and that such instructions do not require the Bidder to submit Vendex Questionnaires. The Bidder has completed **TWO ORIGINALS** of the Certification of No Change set forth on the next page of this Bid Booklet.

By: _____
(Signature of Partner or corporate officer)

Print Name: _____

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DIRECTIONS: Please execute two originals (both with original signature).
Please forward directly to the agency (not M.O.C.S.).



Certificate of No Change Form

- Please submit two completed forms. Copies will not be accepted.
- Please send both copies to the agency that requested it, unless you are advised to send it directly to the Mayor's Office of Contract Services (MOCS).
- A materially false statement willfully or fraudulently made in connection with this certification, and/or the failure to conduct appropriate due diligence in verifying the information that is the subject of this certification, may result in rendering the submitting entity non-responsible for the purpose of contract award.
- A materially false statement willfully or fraudulently made in connection with this certification may subject the person making the false statement to criminal charges

I, _____, being duly sworn, state that I have read
Enter Your Name

and understand all the items contained in the vendor questionnaire and any submission of change as identified on page one of this form and certify that as of this date, these items have not changed. I further certify that, to the best of my knowledge, information and belief, those answers are full, complete, and accurate; and that, to the best of my knowledge, information, and belief, those answers continue to be full, complete, and accurate.

In addition, I further certify on behalf of the submitting vendor that the information contained in the principal questionnaire(s) and any submission of change identified on page two of this form have not changed and have been verified and continue, to the best of my knowledge, to be full, complete and accurate.

I understand that the City of New York will rely on the information supplied in this certification as additional inducement to enter into a contract with the submitting entity.

Vendor Questionnaire *This section is required.*

This refers to the vendor questionnaire(s) submitted for the vendor doing business with the City.

Name of Submitting Entity: _____

Vendor's Address: _____

Vendor's EIN or TIN: _____ Requesting Agency: _____

Are you submitting this Certification as a parent? (Please circle one) Yes No

Signature date on the last full vendor questionnaire signed for the submitting vendor: _____

Signature date on change submission for the submitting vendor: _____

Principal Questionnaire

This section refers to the most recent principal questionnaire submissions.



Principal Name	Date of signature on last full Principal Questionnaire	Date(s) of signature on submission of change
1		
2		
3		
4		
5		
6		

Check if additional changes were submitted and attach a document with the date of additional submissions.

Certification *This section is required.*

This form must be signed and notarized. Please complete this twice. Copies will not be accepted.

Certified By:

Name (Print)

Title

Name of Submitting Entity

Signature

Date

Notarized By:

Notary Public

County License Issued

License Number

Sworn to before me on: _____
Date

DIRECTIONS: Please execute two originals (both with original signature).
Please forward directly to the agency (not M.O.C.S.).



Certificate of No Change Form

- Please submit two completed forms. Copies will not be accepted.
- Please send both copies to the agency that requested it, unless you are advised to send it directly to the Mayor's Office of Contract Services (MOCS).
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- A materially false statement willfully or fraudulently made in connection with this certification may subject the person making the false statement to criminal charges

I, _____, being duly sworn, state that I have read
Enter Your Name

and understand all the items contained in the vendor questionnaire and any submission of change as identified on page one of this form and certify that as of this date, these items have not changed. I further certify that, to the best of my knowledge, information and belief, those answers are full, complete, and accurate; and that, to the best of my knowledge, information, and belief, those answers continue to be full, complete, and accurate.

In addition, I further certify on behalf of the submitting vendor that the information contained in the principal questionnaire(s) and any submission of change identified on page two of this form have not changed and have been verified and continue, to the best of my knowledge, to be full, complete and accurate.

I understand that the City of New York will rely on the information supplied in this certification as additional inducement to enter into a contract with the submitting entity.

Vendor Questionnaire *This section is required.*

This refers to the vendor questionnaire(s) submitted for the vendor doing business with the City.

Name of Submitting Entity: _____

Vendor's Address: _____

Vendor's EIN or TIN: _____ Requesting Agency: _____

Are you submitting this Certification as a parent? (Please circle one) Yes No

Signature date on the last full vendor questionnaire signed for the submitting vendor: _____

Signature date on change submission for the submitting vendor: _____

Principal Questionnaire

This section refers to the most recent principal questionnaire submissions.



Principal Name	Date of signature on last full Principal Questionnaire	Date(s) of signature on submission of change
1		
2		
3		
4		
5		
6		

Check if additional changes were submitted and attach a document with the date of additional submissions.

Certification *This section is required.*

This form must be signed and notarized. Please complete this twice. Copies will not be accepted.

Certified By:

Name (Print)

Title

Name of Submitting Entity

Signature

Date

Notarized By:

Notary Public

County License Issued

License Number

Sworn to before me on: _____
Date

IRAN DIVESTMENT ACT COMPLIANCE RIDER
FOR NEW YORK CITY CONTRACTORS

The Iran Divestment Act of 2012, effective as of April 12, 2012, is codified at State Finance Law ("SFL") §165-a and General Municipal Law ("GML") §103-g. The Iran Divestment Act, with certain exceptions, prohibits municipalities, including the City, from entering into contracts with persons engaged in investment activities in the energy sector of Iran. Pursuant to the terms set forth in SFL §165-a and GML §103-g, a person engages in investment activities in the energy sector of Iran if:

- (a) The person provides goods or services of twenty million dollars or more in the energy sector of Iran, including a person that provides oil or liquefied natural gas tankers, or products used to construct or maintain pipelines used to transport oil or liquefied natural gas, for the energy sector of Iran; or
- (b) The person is a financial institution that extends twenty million dollars or more in credit to another person, for forty-five days or more, if that person will use the credit to provide goods or services in the energy sector in Iran and is identified on a list created pursuant to paragraph (b) of subdivision three of Section 165-a of the State Finance Law and maintained by the Commissioner of the Office of General Services.

A bid or proposal shall not be considered for award nor shall any award be made where the bidder or proposer fails to submit a signed and verified bidder's certification.

Each bidder or proposer must certify that it is not on the list of entities engaged in investment activities in Iran created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the State Finance Law. In any case where the bidder or proposer cannot certify that they are not on such list, the bidder or proposer shall so state and shall furnish with the bid or proposal a signed statement which sets forth in detail the reasons why such statement cannot be made. The City of New York may award a bid to a bidder who cannot make the certification on a case by case basis if:

- (1) The investment activities in Iran were made before the effective date of this section (i.e., April 12, 2012), the investment activities in Iran have not been expanded or renewed after the effective date of this section and the person has adopted, publicized and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran: or
- (2) The City makes a determination that the goods or services are necessary for the City to perform its functions and that, absent such an exemption, the City would be unable to obtain the goods or services for which the contract is offered. Such determination shall be made in writing and shall be a public document.

**BIDDER'S CERTIFICATION OF COMPLIANCE WITH
IRAN DIVESTMENT ACT**

Pursuant to General Municipal Law §103-g, which generally prohibits the City from entering into contracts with persons engaged in investment activities in the energy sector of Iran, the bidder/proposer submits the following certification:

[Please Check One]

BIDDER'S CERTIFICATION

- By submission of this bid or proposal, each bidder/proposer and each person signing on behalf of any bidder/proposer certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief, that each bidder/proposer is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the State Finance Law.
- I am unable to certify that my name and the name of the bidder/proposer does not appear on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the State Finance Law. I have attached a signed statement setting forth in detail why I cannot so certify.

Dated: _____, New York
 _____, 20__

SIGNATURE

PRINTED NAME

TITLE

Sworn to before me this
____ day of _____, 20__

Notary Public

Dated:

CITY OF NEW YORK

DIVISION OF LABOR SERVICES

CONSTRUCTION EMPLOYMENT REPORT

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The City of New York Department of Small Business Services
Division of Labor Services Contract Compliance Unit
110 William Street, New York, New York 10038
Phone: (212) 513 - 6323
Fax: (212) 618-8879

CONSTRUCTION EMPLOYMENT REPORT

GENERAL INFORMATION

1. Your contractual relationship in this contract is: Prime contractor ___ Subcontractor ___
- 1a. Are MWBE goals attached to this project? Yes ___ No ___
2. Please check one of the following if your firm would like information on how to certify with the City of New York as a:

___ Minority Owned Business Enterprise	___ Locally Based Business Enterprise
___ Women Owned Business Enterprise	___ Emerging Business Enterprise
___ Disadvantaged Business Enterprise	
- 2a. If you are certified as an **MBE, WBE, LBE, EBE** or **DBE**, what city/state agency are you certified with? _____ Are you DBE certified? Yes ___ No ___
3. Please indicate if you would like assistance from SBS in identifying certified M/WBEs for contracting opportunities: Yes ___ No ___
4. Is this project subject to a project labor agreement? Yes ___ No ___
5. Are you a Union contractor? Yes ___ No ___ If yes, please list which local(s) you affiliated with _____
6. Are you a Veteran owned company? Yes ___ No ___

PART I: CONTRACTOR/SUBCONTRACTOR INFORMATION

7. _____
Employer Identification Number or Federal Tax I.D. Email Address
8. _____
Company Name
9. _____
Company Address and Zip Code
10. _____
Chief Operating Officer Telephone Number
11. _____
Designated Equal Opportunity Compliance Officer Telephone Number
(If same as Item #10, write "same")
12. _____
Name of Prime Contractor and Contact Person
(If same as Item #8, write "same")

13. Number of employees in your company: _____

14. Contract information:

(a) _____
Contracting Agency (City Agency)

(b) _____
Contract Amount

(c) _____
Procurement Identification Number (PIN)

(d) _____
Contract Registration Number (CT#)

(e) _____
Projected Commencement Date

(f) _____
Projected Completion Date

(g) Description and location of proposed contract:

15. Has your firm been reviewed by the Division of Labor Services (DLS) within the past 36 months and issued a Certificate of Approval? Yes ___ No ___

If yes, attach a copy of certificate.

16. Has DLS within the past month reviewed an Employment Report submission for your company and issued a Conditional Certificate of Approval? Yes ___ No ___

If yes, attach a copy of certificate.

NOTE: DLS WILL NOT ISSUE A CONTINUED CERTIFICATE OF APPROVAL IN CONNECTION WITH THIS CONTRACT UNLESS THE REQUIRED CORRECTIVE ACTIONS IN PRIOR CONDITIONAL CERTIFICATES OF APPROVAL HAVE BEEN TAKEN.

17. Has an Employment Report already been submitted for a different contract (not covered by this Employment Report) for which you have not yet received compliance certificate?
Yes ___ No ___ If yes,

Date submitted: _____

Agency to which submitted: _____

Name of Agency Person: _____

Contract No: _____

Telephone: _____

18. Has your company in the past 36 months been audited by the United States Department of Labor, Office of Federal Contract Compliance Programs (OFCCP)? Yes ___ No ___

If yes,

(a) Name and address of OFCCP office.

(b) Was a Certificate of Equal Employment Compliance issued within the past 36 months?
Yes___ No___

If yes, attach a copy of such certificate.

(c) Were any corrective actions required or agreed to? Yes___ No___

If yes, attach a copy of such requirements or agreements.

(d) Were any deficiencies found? Yes___ No___

If yes, attach a copy of such findings.

19. Is your company or its affiliates a member or members of an employers' trade association which is responsible for negotiating collective bargaining agreements (CBA) which affect construction site hiring? Yes___ No___

If yes, attach a list of such associations and all applicable CBA's.

PART II: DOCUMENTS REQUIRED

20. For the following policies or practices, attach the relevant documents (e.g., printed booklets, brochures, manuals, memoranda, etc.). If the policy(ies) are unwritten, attach a full explanation of the practices. See instructions.

- ___ (a) Health benefit coverage/description(s) for all management, nonunion and union employees (whether company or union administered)
- ___ (b) Disability, life, other insurance coverage/description
- ___ (c) Employee Policy/Handbook
- ___ (d) Personnel Policy/Manual
- ___ (e) Supervisor's Policy/Manual
- ___ (f) Pension plan or 401k coverage/description for all management, nonunion and union employees, whether company or union administered
- ___ (g) Collective bargaining agreement(s).
- ___ (h) Employment Application(s)
- ___ (i) Employee evaluation policy/form(s).
- ___ (j) Does your firm have medical and/or non-medical (i.e. education, military, personal, pregnancy, child care) leave policy?

21. To comply with the Immigration Reform and Control Act of 1986 when and of whom does your firm require the completion of an I-9 Form?

- | | |
|--|--------------|
| (a) Prior to job offer | Yes___ No___ |
| (b) After a conditional job offer | Yes___ No___ |
| (c) After a job offer | Yes___ No___ |
| (d) Within the first three days on the job | Yes___ No___ |
| (e) To some applicants | Yes___ No___ |
| (f) To all applicants | Yes___ No___ |
| (g) To some employees | Yes___ No___ |
| (h) To all employees | Yes___ No___ |

22. Explain where and how completed I-9 Forms, with their supportive documentation, are maintained and made accessible.

23. Does your firm or any of its collective bargaining agreements require job applicants to take a medical examination? Yes___ No___

If yes, is the medical examination given:

- | | |
|-----------------------------------|--------------|
| (a) Prior to a job offer | Yes___ No___ |
| (b) After a conditional job offer | Yes___ No___ |
| (c) After a job offer | Yes___ No___ |
| (d) To all applicants | Yes___ No___ |
| (e) Only to some applicants | Yes___ No___ |

If yes, list for which applicants below and attach copies of all medical examination or questionnaire forms and instructions utilized for these examinations.

24. Do you have a written equal employment opportunity (EEO) policy? Yes___ No___

If yes, list the document(s) and page number(s) where these written policies are located.

25. Does the company have a current affirmative action plan(s) (AAP)

___ Minorities and Women

___ Individuals with handicaps

___ Other. Please specify _____

26. Does your firm or collective bargaining agreement(s) have an internal grievance procedure with respect to EEO complaints? Yes___ No___

If yes, please attach a copy of this policy.

If no, attach a report detailing your firm's unwritten procedure for handling EEO complaints.

27. Has any employee, within the past three years, filed a complaint pursuant to an internal grievance procedure or with any official of your firm with respect to equal employment opportunity? Yes___ No___

If yes, attach an internal complaint log. See instructions.

28. Has your firm, within the past three years, been named as a defendant (or respondent) in any administrative or judicial action where the complainant (plaintiff) alleged violation of any anti-discrimination or affirmative action laws? Yes___ No___

If yes, attach a log. See instructions.

29. Are there any jobs for which there are physical qualifications? Yes___ No___

If yes, list the job(s), submit a job description and state the reason(s) for the qualification(s).

30. Are there any jobs for which there are age, race, color, national origin, sex, creed, disability, marital status, sexual orientation, or citizenship qualifications? Yes___ No___

If yes, list the job(s), submit a job description and state the reason(s) for the qualification(s).

SIGNATURE PAGE

I, (print name of authorized official signing) _____ hereby certify that the information submitted herewith is true and complete to the best of my knowledge and belief and submitted with the understanding that compliance with New York City's equal employment requirements, as contained in Chapter 56 of the City Charter, Executive Order No. 50 (1980), as amended, and the implementing Rules and Regulations, is a contractual obligation. I also agree on behalf of the company to submit a certified copy of payroll records to the Division of Labor Services on a monthly basis.

Contractor's Name

Name of person who prepared this Employment Report Title

Name of official authorized to sign on behalf of the contractor Title

Telephone Number

Signature of authorized official Date

If contractors are found to be underutilizing minorities and females in any given trade based on Chapter 56 Section 3H, the Division of Labor Services reserves the right to request the contractor's workforce data and to implement an employment program.

Contractors who fail to comply with the above mentioned requirements or are found to be in noncompliance may be subject to the withholding of final payment.

Willful or fraudulent falsifications of any data or information submitted herewith may result in the termination of the contract between the City and the bidder or contractor and in disapproval of future contracts for a period of up to five years. Further, such falsification may result in civil and/or criminal prosecution.

To the extent permitted by law and consistent with the proper discharge of DLS' responsibilities under Charter Chapter 56 of the City Charter and Executive Order No. 50 (1980) and the implementing Rules and Regulations, all information provided by a contractor to DLS shall be confidential.

Only original signatures accepted.

Sworn to before me this _____ day of _____ 20 _____

Notary Public

Authorized Signature

Date

FORM A. CONTRACT BID INFORMATION: USE OF SUBCONTRACTORS/TRADES

1. Do you plan to subcontractor work on this contract? Yes ___ No ___
2. If yes, complete the chart below.

NOTE: All proposed subcontractors with a subcontract in excess of \$750,000 must complete an Employment Report for review and approval before the contract may be awarded and work commences.

SUBCONTRACTOR'S NAME*	OWNERSHIP (ENTER APPROPRIATE CODE LETTERS BELOW)	WORK TO BE PERFORMED BY SUBCONTRACTOR	TRADE PROJECTED FOR USE BY SUBCONTRACTOR	PROJECTED DOLLAR VALUE OF SUBCONTRACT

***If subcontractor is presently unknown, please enter the trade (craft name).**

OWNERSHIP CODES

- W: White
- B: Black
- H: Hispanic
- A: Asian
- N: Native American
- F: Female

FORM B: PROJECTED WORKFORCE

For each trade to be engaged by your company for this project, enter the projected workforce for Males and Females by trade classification on the charts below.

TRADE CLASSIFICATION CODES

- (J) Journeylevel Workers
- (H) Helper
- (A) Apprentice
- (TRN) Trainee
- (TOT) Total by Column

Trade:	MALES						FEMALES															
	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)		(10)			
	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	Native Amer.	
J																						
H																						
A																						
TRN																						
TOT																						

What are the recruitment sources for you projected hires (i.e., unions, government employment office, job tap center, community outreach)?

FORM B: PROJECTED WORKFORCE

Trade: _____

Union Affiliation, if applicable _____

Total (Col. #1-10): _____

Total Minority, Male & Female
(Col. #2,3,4,5,7,8,9, & 10): _____

Total Female
(Col. #6 - 10): _____

MALES

(1) White Non Hisp.	(2) Black Non Hisp.	(3) Hisp.	(4) Asian	(5) Native Amer.

J
H
A
TRN
TOT

FEMALES

(6) White Non Hisp.	(7) Black Non Hisp.	(8) Hisp.	(9) Asian	(10) Native Amer.

What are the recruitment sources for you projected hires (i.e., unions, government employment office, job tap center, community outreach)?

FORM C: CURRENT WORKFORCE

TRADE CLASSIFICATION CODES

- (J) Journeylevel Workers
- (H) Helper
- (TOT) Total by Column
- (A) Apprentice
- (TRN) Trainee

For each trade currently engaged by your company for all work performed in New York City, enter the current workforce for Males and Females by trade classification on the charts below.

Trade:	MALES						FEMALES						
	(1)		(2)		(3)	(4)	(5)	(6)		(7)	(8)	(9)	(10)
	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	Hisp.	Asian	Native Amer.	White Non Hisp.	Black Non Hisp.	Hisp.	Asian	Native Amer.	
J													
H													
A													
TRN													
TOT													

Total (Col. #1-10): _____

Total Minority, Male & Female
(Col. #2,3,4,5,7,8,9, & 10): _____

Total Female
(Col. #6 - 10): _____

What are the recruitment sources for you projected hires (i.e., unions, government employment office, job tap center, community outreach)?

FORM C: CURRENT WORKFORCE

Trade: _____

Union Affiliation, if applicable _____

Total (Col. #1-10): _____

Total Minority, Male & Female
(Col. #2,3,4,5,7,8,9, & 10): _____

Total Female
(Col. #6 - 10): _____

MALES

(1) White Non Hisp.	(2) Black Non Hisp.	(3) Hisp.	(4) Asian	(5) Native Amer.

J
H
A
TRN
TOT

FEMALES

(6) White Non Hisp.	(7) Black Non Hisp.	(8) Hisp.	(9) Asian	(10) Native Amer.

What are the recruitment sources for you projected hires (i.e., unions, government employment office, job tap center, community outreach)?



FMS ID: PV181HSA2



**THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS**

30-30 THOMSON AVENUE LONG ISLAND CITY, NEW YORK 11101-3045
TELEPHONE (718) 391-1000 WEBSITE www.nyc.gov/buildnyc

Contract for Furnishing all Labor and Material Necessary and Required for:

CONTRACT NO. 1 GENERAL CONSTRUCTION

Harlem School of the Arts, Phase II Building Renovations

**LOCATION: 645 St. Nicholas Avenue
BOROUGH: Manhattan 10031
CITY OF NEW YORK**

Contractor _____

Dated _____, 20____

Entered in the Comptroller's Office _____

First Assistant Bookkeeper _____

Dated _____, 20____





PROJECT ID: PV181HSA2

**THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS**

30-30 THOMSON AVENUE
LONG ISLAND CITY, NEW YORK 11101-3045
TELEPHONE (718) 391-1000
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VOLUME 2 OF 3

**INFORMATION FOR BIDDERS
CONTRACT
PERFORMANCE AND PAYMENT BONDS
SCHEDULE OF PREVAILING WAGES
GENERAL CONDITIONS**

FOR FURNISHING ALL LABOR AND MATERIALS
NECESSARY AND REQUIRED FOR THE PROJECT

**Harlem School of the Arts, Phase II
Building Renovations**

LOCATION: 645 St. Nicholas Avenue
BOROUGH: Manhattan 10031
CITY OF NEW YORK
CONTRACT NO. 1 GENERAL CONSTRUCTION

DCA

Greenman-Pedersen, Inc.

Date: May 27, 2015



15-188





NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

**THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS**

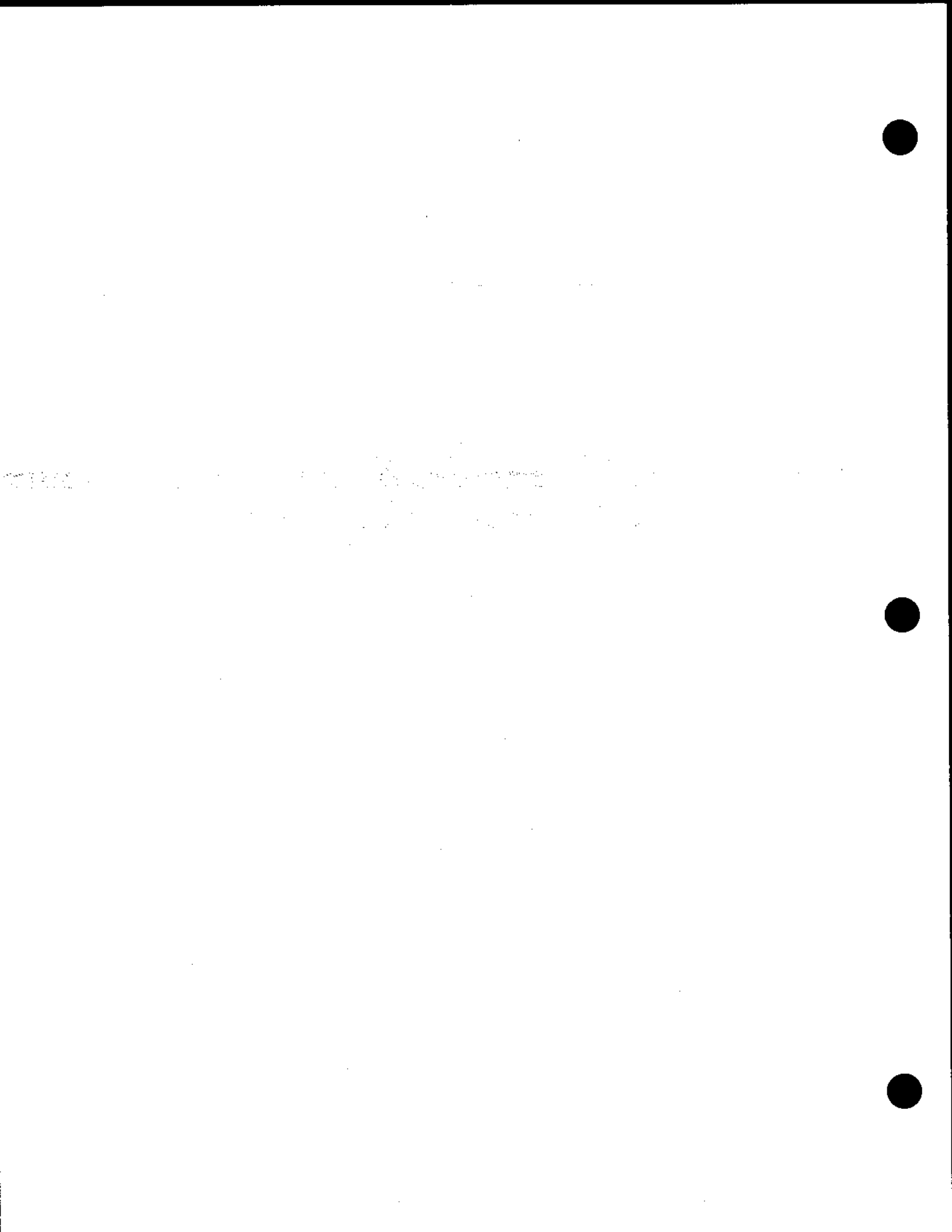
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VOLUME 2 OF 3

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NECESSARY AND REQUIRED FOR THE PROJECT





NOTICE TO BIDDERS

Please be advised that the City of New York has issued a new Standard Construction Contract. The new Contract, which is incorporated in this bid, is significantly different from the 2008 version previously used by the City. A listing of some of the significant changes is provided below. This notice is only a partial listing. Please refer to the Contract itself for a full understanding of the changes and the actual text of the changes that were made. The text of the revised Standard Construction Contract is the controlling document should there be any discrepancies between this notice and the Standard Construction Contract.

Significant changes include the following:

ARTICLE 11 DAMAGES CAUSED BY DELAYS

In 2008, the City embarked on a pilot project to test the use of new construction contract language altering the allocation of the risk of project delays, as between the City and the contractor. The City has determined to make the pilot project language the standard language for all City construction contracts. Accordingly, there is now one Standard City Construction Contract that it to be used by all agencies for all bids released after the release of the new contract. The damages for delay language is Article 11. Please note that changes have been made to the damages for delay provisions from the pilot to the adopted version.

ARTICLE 22 INSURANCE

Changes have been made to the insurance provisions, including incorporating requirements that the insurance provided comply with recent NYC Department of Buildings regulations specifying required dollar limits for CGL insurance for certain projects and requiring proof of builder's risk insurance prior to Work commencing rather than within 10 days of award.

ARTICLE 26 EXTRA WORK

The percentage paid for overhead for Extra Work pursuant to Section 26.1.11 is increased from 10% to 12% and the calculation of Worker's Compensation insurance costs reimbursed for Extra Work has been clarified.

ARTICLE 37 LABOR LAW REQUIREMENTS
ARTICLE 38 PAYROLL REPORTS

The provisions governing Labor Law provisions have been tightened, including requirements the employee identification cards include a photo (unless the requirement is waived), a prohibition on cash payments to employees and subcontractors, and clear enforcement authority requirements.

ARTICLE 70 ELECTRONIC FILING

A provision is added to make mandatory the electronic filing of certain alteration permits with the Department of Buildings.

Other significant changes include the following:

ARTICLE 7 INDEMNIFICATION

Changes have been made to the indemnification provisions.

ARTICLE 14 FINAL ACCEPTANCE OF WORK
ARTICLE 44 SUBSTANTIAL COMPLETION PAYMENT

The Commissioner is no longer required to issue a substantial completion determination in addition to the already existing requirement that the Engineer issue a substantial completion determination and reach an agreement on a punch list of remaining work. Now, the Engineer, when issuing the punch list to the Contractor, must also include a proposed schedule for the completion of the punch list. The Contractor may propose an alternative schedule that is subject to the approval of the Engineer. If the Contractor fails to respond to the Engineer's proposed schedule, the Engineer's schedule is deemed accepted.

ARTICLE 15 LIQUIDATED DAMAGES

The contract is revised to match Schedule A to provide that liquidated damages are available only until substantial completion.

ARTICLE 17 SUBCONTRACTS

The requirements for prior approval of subcontractors, and for contractors to be responsible for the actions of their subcontractors, have been tightened. The requirement that the Contractor list subcontractors in the City's Payee Information Portal has been added; the provision was previously attached as a rider.

ARTICLE 19 SECURITY DEPOSIT

The provisions governing the return of bid deposits are clarified.

ARTICLE 20 PAYMENT GUARANTEE

The Payment Guaranty provisions, which apply when the City does not require the Contractor to obtain payment bonds, has been significantly revised to track the requirements of State Finance law 137.

ARTICLE 28 RECORDKEEPING FOR EXTRA OR DISPUTED WORK

The recordkeeping requirement that currently apply to payments for Time & Materials for extra work are expressly made applicable to regular work that is paid for on a T & M basis.

ARTICLE 35 EMPLOYEES

The whistleblower provisions of local law are added to the construction contract. They previously have been attached as a rider.

**ARTICLE 38 PAYROLL REPORTS
ARTICLE 77 RECORDS RETENTION**

Requirements that records be maintained for six years and directions on how such records must be made available.

ARTICLE 42 PARTIAL PAYMENTS

Increased flexibility has been provided for when contractors may submit invoices.

ARTICLE 62 TAX EXEMPTION

The provisions identifying the State tax exemption for municipalities are revised to more clearly describe State law.

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CITY OF NEW YORK
DEPARTMENT OF
DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

INFORMATION FOR BIDDERS

December 2013

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INFORMATION FOR BIDDERS

1. Description and Location of Work

The description and location of the work for which bids are requested are specified in Attachment 1, "Bid Information". Attachment 1 is included in the Bid Booklet.

2. Time and Place for Receipt of Bids

Sealed bids shall be received on or before the date and hour specified in Attachment 1, at which time they will be publicly opened and read aloud in the presence of the Commissioner or his or her representative, and any bidders who may desire to be present.

3. Definitions

The definitions set forth in the Procurement Policy Board Rules shall apply to this Invitation For Bids.

4. Invitation For Bids and Contract Documents

(A) Except for titles, sub-titles, headings, running headlines, tables of contents and indices (all of which are printed herein merely for convenience) the following, except for such portions thereof as may be specifically excluded, shall be deemed to be part of the Contract and the Invitation for Bids.

- (1) All provisions required by law to be inserted in this Contract, whether actually inserted or not
- (2) The Contract Drawings and Specifications
- (3) The General Conditions, the General Requirements and the Special Conditions, if any
- (4) The Contract
- (5) The Information for Bidders; Request for Proposals; Notice of Solicitation and Proposal For Bids; Bid or Proposal, and, if used, the Bid Booklet
- (6) The Budget Director's Certificate; all Addenda issued prior to the receipt of the bids; the Notice of Award; Performance and Payment Bonds, if required; and the Notice to Proceed with the Work.

(B) For particulars as to this procurement, including quantity and quality of the purchase, extent of the work or labor to be performed, delivery and performance schedule, and any other special instructions, prospective bidders are referred to the Invitation For Bids Documents. A copy of such documents can be obtained at the location set forth in Attachment 1.

(C) Deposit for Copy of Invitation For Bids Documents: Prospective bidders may obtain a copy of the Invitation For Bids Documents by complying with the conditions set forth in the Notice of Solicitation. The deposit must be in the form of a check or money order made payable to the City of New York, and drawn upon a state or national bank or trust company, or a check of such bank or trust company signed by a duly authorized officer thereof.

(D) Return of Invitation For Bids Documents: All Invitation For Bids Documents must be returned to the Department upon request. If the bidder elects not to submit a bid thereunder, the Invitation For Bids Documents shall be returned to the Department, along with a statement that no bid will be submitted.

(E) Return of Deposit: Such deposit will be returned within 30 days after the award of the contract or the rejection of all bids as set forth in the advertisement, provided the Invitation For Bids Documents are returned to the location specified in Attachment 1, in physical condition satisfactory to the Commissioner.

(F) Additional Copies: Additional copies of the Invitation For Bids Documents may be obtained, subject to the conditions set forth in the advertisement for bids.

5. Pre-Bid Conference

A pre-bid conference shall be held as set forth in Attachment 1. Nothing stated at the pre-bid conference shall change the terms or conditions of the Invitation For Bids Documents, unless a change is made by written amendment as provided in Section 9 below. Failure to attend a mandatory pre-bid conference shall constitute grounds for the rejection of the bid.

6. Agency Contact

Any questions or correspondence relating to this bid solicitation shall be addressed to the Agency Contact person specified in Attachment 1.

7. Bidder's Oath

(A) The bid shall be properly signed by an authorized representative of the bidder and the bid shall be verified by the written oath of the authorized representative who signed the bid, that the several matters stated and information furnished therein are in all aspects true.

(B) A materially false statement willfully or fraudulently made in connection with the bid or any of the forms completed and submitted with the bid may result in the termination of any Contract between the City and the Bidder. As a result, the Bidder may be barred from participating in future City contracts as well as be subject to possible criminal prosecution.

8. Examination and Viewing of Site, Consideration of Other Sources of Information and Changed Conditions

(A) Pre-Bidding (Investigation) Viewing of Site - Bidders must carefully view and examine the site of the proposed work, as well as its adjacent area, and seek other usual sources of information, for they will be conclusively presumed to have full knowledge of any and all conditions on, about or above the site relating to or affecting in any way the performance of the work to be done under the Contract which were or should have been indicated to a reasonably prudent bidder. To arrange a date for visiting the work site, bidders are to contact the Agency Contact person specified in Attachment 1.

(B) Should the contractor encounter during the progress of the work subsurface conditions at the site materially differing from any shown on the Contract Drawings or indicated in the Specifications or such subsurface conditions as could not reasonably have been anticipated by the contractor and were not anticipated by the City, which conditions will materially affect the cost of the work to be done under the Contract, the attention of the Commissioner must be called immediately to such conditions before they are disturbed. The Commissioner shall thereupon promptly investigate the conditions. If he finds that they do so materially differ, or that they could not reasonably have been anticipated by the contractor and were not anticipated by the City, the Contract may be modified with his written approval.

9. Examination of Proposed Contract

(A) Request for Interpretation or Correction: Prospective bidders must examine the Contract Documents carefully and before bidding must request the Commissioner in writing for an interpretation or correction of every patent ambiguity, inconsistency or error therein which should have been discovered by a reasonably prudent bidder. Such interpretation or correction, as well as any additional contract provisions the Commissioner may decide to include, will be issued in writing by the Commissioner as an addendum to the Contract, which will be transmitted to each person recorded as having received a copy of the Contract Documents from the Department. Transmission of such addendum will be by mail, e-mail, facsimile or hand delivery. Such addendum will also be posted at the place where the Contract Documents are available for the inspection of prospective bidders. Upon transmission as provided for herein, such addendum shall become a part of the Contract Documents, and binding on all bidders, whether or not actual notice of such addendum is shown.

(B) Only Commissioner's Interpretation or Correction Binding: Only the written interpretation or correction so given by the Commissioner shall be binding, and prospective bidders are warned that no other officer, agent or employee of the City is authorized to give information concerning, or to explain or interpret, the Contract.

(C) Documents given to a subcontractor for the purpose of soliciting the subcontractor's bid shall include either a copy of the bid cover sheet or a separate information sheet setting forth the project name, the Contract number (if available), the contracting agency and the Project's location.

10. Form of Bid

Each bid must be submitted upon the prescribed form and must contain: a) the name, residence and place of business of the person or persons making the same; b) the names of all persons interested therein, and if no other person is so interested, such fact must be distinctly stated; c) a statement to the effect that it is made without any connection with any other person making a bid for the same purpose and that it is in all respects fair and without collusion or fraud; d) a statement that no Council member or other officer or employee or person whose salary is payable in whole or part from the City Treasury is directly or indirectly interested therein or in the supplies, materials or equipment and work or labor to which it relates, or in any portion of the profits thereof; e) a statement that the bidder is not in arrears to the City or to any agency upon a debt or contract or taxes, and is not a defaulter as surety or otherwise upon any obligation to the City to any agency thereof, except as set forth in the bid.

THE BID SHALL BE TYPEWRITTEN OR WRITTEN LEGIBLY IN INK. THE BID SHALL BE SIGNED IN INK. ERASURES OR ALTERATIONS SHALL BE INITIALED BY THE SIGNER IN INK. FAILURE TO CONFORM TO THE REQUIREMENTS OF THIS SECTION 10 SHALL RESULT IN THE REJECTION OF THE BID.

11. Irrevocability of Bid

The prices set forth in the bid cannot be revoked and shall be effective until the award of the Contract, unless the bid is withdrawn as provided for in Sections 15 and 18 below.

12. Acknowledgment of Amendments

The receipt of any amendment to the Contract Documents shall be acknowledged by the bidder in its bid submission.

13. Bid Samples and Descriptive Literature

Bid samples and descriptive literature shall not be submitted by the bidder, unless expressly requested elsewhere in the Contract or Contract Documents. Any unsolicited bid samples or descriptive literature which are submitted shall not be examined or tested and shall not be deemed to vary any of the provisions of this Contract.

14. Proprietary Information/Trade Secrets

(A) The bidder shall identify those portions of the bid which it deems to be confidential, proprietary information or trade secrets, and provide justification why such materials shall not be disclosed by the City. All such materials shall be clearly indicated by stamping the pages on which such information appears, at the top and bottom thereof with the word "Confidential". Such materials stamped "Confidential" must be easily separable from the non-confidential sections of the bid.

(B) All such materials so indicated shall be reviewed by the Agency and any decision not to honor a request for confidentiality shall be communicated in writing to the bidder. For those bids which are unsuccessful, all such confidential materials shall be returned to the bidder. Prices, makes and model or catalog numbers of the items offered, deliveries, and terms of payment shall be publicly available after bid opening, regardless of any designation of confidentiality made by the bidder.

15. Pre-Opening Modification or Withdrawal of Bids

Bids may be modified or withdrawn by written notice received in the office designated in Attachment 1, before the time and date set for the bid opening. If a bid is withdrawn in accordance with this Section, the bid security, if any, shall be returned to the bidder.

16. Bid Evaluation and Award

In accordance with the New York City Charter, the Procurement Policy Board Rules and the terms and conditions of this Invitation For Bids, this Contract shall be awarded, if at all, to the responsible bidder whose bid meets the requirements and evaluation criteria set forth in the Invitation For Bids, and whose bid price is either the most favorable bid price or, if the Invitation For Bids so states, the most favorable evaluated bid price. A bid may not be evaluated for any requirement or criterion that is not disclosed in the Invitation For Bids.

Restriction: No negotiations with any bidder shall be allowed to take place except under the circumstances and in the manner set forth in Section 21. Nothing in this Section shall be deemed to permit a contract award to a bidder submitting a higher quality item than that designated in the Invitation For Bids, if that bid is not also the most favorable bid.

17. Late Bids, Late Withdrawals and Late Modifications

Any bid received at the place designated in the solicitation after the time and date set for receipt of bids is late and shall not be considered. Any request for withdrawal or modification received at the place designated in the solicitation after the time and date set for receipt of bids is late and shall not be considered. The exception to this provision is that a late modification of a successful bid that makes the bid terms more favorable to the City shall be considered at any time it is received.

18. Withdrawal of Bids.

Except as provided for in Section 15, above, a bidder may not withdraw its bid before the expiration of forty-five (45) days after the date of the opening of bids; thereafter, a bidder may withdraw its bid only in writing and in advance of an actual award. If within sixty (60) days after the execution of the Contract, the Commissioner fails to fix the date for commencement of work by written notice to the bidder, the bidder, at his option, may ask to be relieved of his obligation to perform the work called for by written notice to the Commissioner. If such notice is given to the Commissioner, and the request to withdraw is granted, the bidder waives all claims in connection with this Contract.

19. Mistake in Bids

(A) Mistake Discovered Before Bid Opening: A bidder may correct mistakes discovered before the time and date set for bid opening by withdrawing or correcting the bid as provided in Section 15 above.

(B) Mistakes Discovered Before Award

(1) In accordance with General Municipal Law (Section 103, subdivision 11), where a unilateral error or mistake is discovered in a bid, such bid may be withdrawn upon written approval of the Agency Chief Contracting Officer if the following conditions are met:

- (a) The mistake is known or made known to the agency prior to the awarding of the Contract or within 3 days after the opening of the bid, whichever period is shorter; and
- (b) The price bid was based upon an error of such magnitude that enforcement would be unconscionable; and

- (c) The bid was submitted in good faith and the bidder submits credible evidence that the mistake was a clerical error as opposed to a judgment error; and
- (d) The error in the bid is actually due to an unintentional and substantial arithmetic error or an unintentional omission of a substantial quantity of work, labor, material or services made directly in the compilation of the bid, which unintentional arithmetic error or unintentional omission can be clearly shown by objective evidence drawn from inspection of the original work paper, documents, or materials used in the preparation of the bid sought to be withdrawn; and
- (e) It is possible to place the agency in the same position as existed prior to the bid.

(2) Unless otherwise required by law, the sole remedy for a bid mistake in accordance with this Article shall be withdrawal of the bid, and the return of the bid bond or other security, if any, to the bidder. Thereafter, the agency may, in its discretion, award the Contract to the next lowest bidder or rebid the Contract. Any amendment to or reformation of a bid or a Contract to rectify such an error or mistake therein is strictly prohibited.

(3) If the mistake and the intended correct bid are clearly evident on the face of the bid document, the bid shall be corrected to the intended correct bid and may not be withdrawn. Examples of mistakes that may be corrected are typographical errors, errors in extending unit prices, transposition errors and arithmetical errors.

20. Low Tie Bids

(A) When two or more low responsive bids from responsible bidders are identical in price, meeting all the requirements and criteria set forth in the Invitation For Bids, the Agency Chief Contracting Officer will break the tie in the following manner and order of priority:

- (1) Award to a certified New York City small, minority or woman-owned business entity bidder;
- (2) Award to a New York City bidder;
- (3) Award to a certified New York State small, minority or woman-owned business bidder;
- (4) Award to a New York State bidder.

(B) If two or more bidders still remain equally eligible after application of paragraph (A) above, award shall be made by a drawing by lot limited to those bidders. The bidders involved shall be invited to attend the drawing. A witness shall be present to verify the drawing and shall certify the results on the bid tabulation sheet.

21. Rejection of Bids

(A) Rejection of Individual Bids: The Agency may reject a bid if:

- (1) The bidder fails to furnish any of the information required pursuant to Section 24 or 28 hereof; or if
- (2) The bidder is determined to be not responsible pursuant to the Procurement Policy Board Rules; or if
- (3) The bid is determined to be non-responsive pursuant to the Procurement Policy Board Rules; or if
- (4) The bid, in the opinion of the Agency Chief Contracting Officer, contains unbalanced bid prices and is thus non-responsive, unless the bidder can show that the prices are not unbalanced for the probable required quantity of items, or if the imbalance is corrected pursuant to Section 15.

(B) Rejection of All Bids: The Agency, upon written approval by the Agency Chief Contracting Officer, may reject all bids and may elect to resolicit bids if in its sole opinion it shall deem it in the best interest of the City so to do.

(C) Rejection of All Bids and Negotiation With All Responsible Bidders: The Agency Head may determine that it is appropriate to cancel the Invitation For Bids after bid opening and before award and to complete the acquisition by negotiation. This determination shall be based on one of the following reasons:

- (1) All otherwise acceptable bids received are at unreasonable prices, or only one bid is received and the Agency Chief Contracting Officer cannot determine the reasonableness of the bid price, or no responsive bid has been received from a responsible bidder; or
- (2) In the judgment of the Agency Chief Contracting Officer, the bids were not independently arrived at in open competition, were collusive, or were submitted in bad faith.

(D) When the Agency has determined that the Invitation for Bids is to be canceled and that use of negotiation is appropriate to complete the acquisition, the contracting officer may negotiate and award the Contract without issuing a new solicitation, subject to the following conditions:

- (1) prior notice of the intention to negotiate and a reasonable opportunity to negotiate have been given by the contracting officer to each responsible bidder that submitted a bid in response to the Invitation for Bids;
- (2) the negotiated price is the lowest negotiated price offered by a responsible bidder; and
- (3) the negotiated price is lower than the lowest rejected bid price of a responsible bidder that submitted a bid in response to the Invitation for Bids.

22. Right to Appeal Determinations of Non-Responsiveness or Non-Responsibility and Right to Protest Solicitations and Award

The bidder has the right to appeal a determination of non-responsiveness or non-responsibility and has the right to protest a solicitation and award. For further information concerning these rights, the bidder is directed to the Procurement Policy Board Rules.

23. Affirmative Action and Equal Employment Opportunity

This Invitation For Bids is subject to applicable provisions of Federal, State and Local Laws and executive orders requiring affirmative action and equal employment opportunity.

24. VENDEX Questionnaires

(A) Requirement: Pursuant to Administrative Code Section 6-116.2 and the PPB Rules, bidders may be obligated to complete and submit VENDEX Questionnaires. Generally, if this bid is \$100,000 or more, or if this bid when added to the sum total of all contracts, concessions and franchises the bidder has received from the City and any subcontracts received from City contractors over the past twelve months, equals or exceeds \$100,000, Vendex Questionnaires must be completed. If required, Vendex Questionnaires must be completed and submitted before any award of contract may be made or before approval is given for a proposed subcontractor. Non-compliance with these submission requirements may result in the disqualification of the bid, disapproval of a subcontractor, subsequent withdrawal of approval for the use of an approved subcontractor, or the cancellation of the contract after its award.

(B) Submission: Vendex Questionnaires must be submitted directly to the Mayor's Office of Contract Services, ATTN: Vendex, 253 Broadway, 9th Floor, New York, New York 10007. In addition, the bidder must submit a Confirmation of Vendex Compliance to the agency. A form for this confirmation is set forth in the Bid Booklet.

(C) Obtaining Forms: Vendex Questionnaires, as well as detailed instructions, may be obtained at www.nyc.gov/vendex. The bidder may also obtain Vendex forms and instructions by contacting the Agency Chief Contracting Officer or the contact person for this contract.

25. Complaints About the Bid Process

The New York City Comptroller is charged with the audit of contracts in New York City. Any vendor who believes that there has been unfairness, favoritism or impropriety in the bid process should inform the Comptroller, Office of Contract Administration, One Centre Street, Room 835, New York, New York; telephone number (212)669-2797.

26. Bid, Performance and Payment Security

(A) Bid Security: Each bid must be accompanied by bid security in an amount and type specified in Attachment 1. The bid security shall assure the City of New York of the adherence of the bidder to its proposal, the execution of the Contract, and the furnishing of Performance and Payment Bonds by the bidder, if required in Attachment 1. Bid security shall be returned to the bidder as follows:

- (1) Within ten (10) days after the bid opening, the Comptroller will be notified to return the deposits of all but the three (3) lowest bidders. Within five (5) days after the award, the Comptroller will be notified to return the deposits of the remaining two unsuccessful bidders.
- (2) Within five (5) days after the execution of the Contract and acceptance of the Contractor's bonds, the Comptroller will be notified to return the bid security of the successful bidder or, if performance and payment bonds are not required, only after the sum retained under Article 21 of the Contract equals the amount of the bid security.
- (3) Where all bids are rejected, the Comptroller will be notified to return the deposit of the three (3) lowest bidders at the time of rejection.

(B) Performance and Payment Security: Performance and Payment Security must be provided in an amount and type specified in Attachment 1. The performance and payment security shall be delivered by the contractor prior to or at the time of execution of the Contract. If a contractor fails to deliver the required performance and payment security, its bid security shall be enforced, and an award of Contract may be made to the next lowest responsible and responsive bidder, or the contract may be rebid.

(C) Acceptable Types of Security: Acceptable types of security for bids, performance, and payment shall be limited to the following:

- (1) a one-time bond in a form satisfactory to the City;
- (2) a bank certified check or money order;
- (3) obligations of the City of New York; or
- (4) other financial instruments as determined by the Office of Construction in consultation with the Comptroller.

Whenever the successful bidder deposits obligations of the City of New York as performance and payment security, the Comptroller may sell and use the proceeds thereof for any purpose for which the principal or surety on such bond would be liable under the terms of the Contract. If the money is deposited with the Comptroller, the successful bidder shall not be entitled to receive interest on such money from the City.

(D) Form of Bonds: Security provided in the form of bonds must be prepared on the form of bonds authorized by the City of New York. Forms for bid, performance, and payment bonds are included in the Invitation for Bids Documents. Such bonds must have as surety thereunder such surety company or companies as are: (1) approved by the City of New York; (2) authorized to do business in the State of New York, and (3) approved by the Department of the Treasury of the United States. Premiums for any required bonds must be included in the base bid.

The bidder is advised that submission of a bid bond where the surety on such bond fails to meet the criteria set forth herein, shall result in the rejection of the bid as non-responsive.

The Department of the Treasury of the United States advises that information concerning approved surety companies may be obtained as follows: (1) from the Government Printing Office at 202-512-1800; (2) through the Internet at <http://www.fms.treas.gov/c570/index.html>, and (3) through a computerized public bulletin board, which can be accessed by using your computer modem and dialing 202-874-6887.

(E) Power of Attorney: Attorneys in fact who sign bid, performance, or payment bonds must file with each bond a certified copy of their power of attorney to sign said bonds.

27. Failure to Execute Contract

In the event of failure of the successful bidder to execute the Contract and furnish the required security within ten (10) days after notice of the award of the Contract, the deposit of the successful bidder or so much thereof as shall be applicable to the amount of the award made shall be retained by the City, and the successful bidder shall be liable for and hereby agrees to pay on demand the difference between the price bid and the price for which such Contract shall be subsequently awarded, including the cost of any required reletting and less the amount of such deposit. No plea of mistake in such accepted bid shall be available to the bidder for the recovery of the deposit or as a defense to any action based upon such accepted bid. Further, should the bidder's failure to comply with this Section cause any funding agency, body or group (Federal, State, City, Public, Private, etc.) to terminate, cancel or reduce the funding on this project, the bidder in such event shall be liable also to the City for the amount of actual funding withdrawn by such agency on this project, less the amount of the forfeited deposit.

28. Bidder Responsibilities and Qualifications

(A) Bidders must include with their bids all information necessary for a determination of bidder responsibility, as set forth in the Specifications.

(B) The Agency may require any bidder or prospective bidder to furnish all books of account, records, vouchers, statements or other information concerning the bidder's financial status for examination as may be required by the Agency to ascertain the bidder's responsibility and capability to perform the Contract. If required, a bidder must also submit a sworn statement setting forth such information as the Agency may require concerning present and proposed plant and equipment, the personnel and qualifications of his working organizations, prior experience and performance record.

(C) Oral Examination on Qualifications: In addition thereto, and when directed by the Agency, the bidder, or a responsible officer, agent or employee of the bidder, must submit to an oral examination to be conducted by the Agency in relation to his proposed tentative plan and schedule of operations, and such other matters as the Agency may deem necessary in order to determine the bidder's ability and responsibility to perform the work in accordance with the Contract. Each person so examined must sign and verify a stenographic transcript of such examination noting thereon such corrections as such person may desire to make.

(D) If the bidder fails or refuses to supply any of the documents or information set forth in paragraph (B) hereof or fails to comply with any of the requirements thereof, the Agency may reject the bid.

29. Employment Report

In accordance with Executive Order No. 50 (1980) as modified by Executive Order 108 (1986), the filing of a completed Employment Report (ER) is a requirement of doing business with the City of New York for construction contractors with contracts of \$1,000,000 or more and subcontractors with construction subcontracts of \$750,000 or more. The required forms and information are included in the Bid Booklet.

30. Labor Law Requirements

(A) General: The successful bidder will be required to comply strictly with all Federal, State and local labor laws and regulations.

(B) New York State Labor Law: This Contract is subject to New York State Labor Law Section 220, which requires that construction workers on the site be paid prevailing wages and supplements. The Contractor is reminded that all wage provisions of this Contract will be enforced strictly and failure to comply will be considered when evaluating performance. Noncompliance may result in the contractor being debarred by the City from future contracts. Complaints filed with the Comptroller may result in decisions which may debar a contractor from bidding contracts with any state governmental entity and other political subdivisions.

(C) Records: The Contractor is expected to submit accurate payroll reports and other required documents and verify attendance and job classifications being utilized in compliance with the law, Contract provisions and agency procedures.

31. Insurance

(A) Bidders are advised that the insurance requirements contained herein are regarded as material terms of the Contract. As required by Article 22 of the Contract, the contractor must effect and maintain with companies licensed and authorized to do business in the State of New York, the types of insurance set forth therein, when required by and in the amounts set forth in Schedule A of the General Conditions. Such required insurance must be provided from the date the contractor is ordered to commence work and up to the date of final acceptance of all required work.

(B) The contractor must, within ten days of receipt of the notice of award, submit the following insurance documentation: (a) original certificate of insurance for general liability in the amount required by Schedule A of the General Conditions, and (b) original certificates of insurance or other proof of coverage for workers' compensation and disability benefits, as required by Section 57 of the New York State Workers' Compensation Law and Section 220 of the Disability Benefits Law.

32. Lump Sum Contracts

(A) Comparison of Bids: Bids on Lump Sum Contracts will be compared on the basis of the lump sum price bid, adjusted for alternate prices bid, if any.

(B) Lump Sum Bids for "General Construction Work" which include excavation shall include all necessary excavation work defined in the Specifications as being included in the lump sum bid. The bidder shall also bid a unit price for the additional cost of excavating material which is defined in the Specifications as excavation for which additional payment will be made. The total estimated additional cost of removing such material will be taken as the quantity set forth in the Engineer's Estimate multiplied by the unit price bid. This total estimated cost of additional excavation shall be added to the lump sum bid for the General Construction Work for the purpose of comparing bids to determine the low bidder.

(C) Variations from Engineer's Estimate: The Engineer's Estimate of the quantity of excavation for which additional payment will be made is approximate only and is given solely to be used as a uniform basis for the comparison of bids and such estimate is not to be considered as part of this contract. The quantities actually required to complete the contract work may be more or less than the quantities in the Engineer's Estimate and, if so, no action for damages or for loss of profits shall accrue to the contractor by reason thereof.

33. Unit Price Contracts

(A) Comparison of Bids: Bids on Unit Price Contracts will be compared on the basis of a total estimated price, arrived at by taking the sum of the estimated quantities of such items, in accordance with the Engineer's Estimate of Quantities set forth in the Bid Form, multiplied by the corresponding unit prices, and including any lump sum bids on individual items.

(B) Variations from Engineer's Estimate: Bidders are warned that the Engineer's Estimate of Quantities on the various items of work and materials is approximate only, given solely to be used as a uniform basis for the comparison of bids, and is not to be considered part of this contract. The quantities actually required to complete the contract work may be less or more than so estimated, and if so, no action for damages or for loss of profits shall accrue to the contractor by reason thereof.

(C) Overruns: The terms and conditions applicable to overruns of unit price items are set forth in Article 26 of the Contract.

34. Excise Tax

Bidders are referred to the Specifications for information on Federal Excise Tax exemptions.

35. Licenses and Permits

The successful bidder will be required to obtain all necessary licenses and permits necessary to perform the work.

36. Multiple Prime Contractors

If more than one prime contractor will be involved on this project, all contractors are required to examine the Invitation for Bid packages for all other parts of the project.

37. Locally Based Enterprise Requirements (LBE)

This Contract is subject to the requirements of Administrative Code, Section 6-108.1, and the regulations promulgated thereunder. No construction contract will be awarded unless and until these requirements have been complied with in their entirety. The bidder is advised of the provisions set forth below, as well as the provisions with respect to the Locally Based Enterprise Program contained in Article 67 of the Contract. The contractor is advised that:

(A) If any portion of the Contract is subcontracted, not less than ten percent of the total dollar amount of the contract shall be awarded to locally based enterprises ("LBEs"); except, where less than ten percent of the total dollar amount of the Contract is subcontracted, such lesser percentage shall be so awarded.

(B) No contractor shall require performance and payment bonds from LBE subcontractors.

(C) No Contract shall be awarded unless the contractor first identifies in its bid:

- (1) the percentage, dollar amount and type of work to be subcontracted; and
- (2) the percentage, dollar amount and type of work to be subcontracted to LBEs.

(D) Within ten calendar days after notification of low bid, the apparent low bidder shall submit an "LBE Participation Schedule" to the contracting agency. If such schedule does not identify sufficient LBE subcontractors to meet the requirements of Administrative Code Section 6-108.1, the apparent low bidder shall submit documentation of its good faith efforts to meet such requirements.

(1) The "LBE Participation Schedule" shall include:

- (a) the name and address of each LBE that will be given a subcontract,
- (b) the percentage, dollar amount and type of work to be subcontracted to the LBE, and
- (c) the dates when the LBE subcontract work will commence and end.

- (2) The following documents shall be attached to the "LBE Participation Schedule":
- (a) verification letters from each subcontractor listed in the "LBE Participation Schedule" stating that the LBE will enter into a formal agreement for work,
 - (b) certification documents of any proposed LBE subcontractor which is not on the LBE certified list, and
 - (c) copies of the certification letter of any proposed subcontractor which is an LBE.
- (3) Documentation of good faith efforts to achieve the required LBE percentage shall include as appropriate but not limited to the following:
- (a) attendance at prebid meetings, when scheduled by the agency, to advise bidders of contract requirements;
 - (b) advertisement where appropriate in general circulation media, trade association publications and small business media of the specific subcontracts that would be at least equal to the percentage goal for LBE utilization specified by the contractor;
 - (c) written notification to association of small, minority and women contractors soliciting specific subcontractors;
 - (d) written notification by certified mail to LBE firms that their interest in the contract is solicited for specific work items and their estimated values;
 - (e) demonstration of efforts made to select portions of the work for performance by LBE firms in order to increase the likelihood of achieving the stated goal;
 - (f) documented efforts to negotiate with LBE firms for specific subcontracts, including at a minimum:
 - (i) The names, address and telephone numbers of LBE firms that are contacted;
 - (ii) A description of the information provided to LBE firms regarding the plans and specifications for portions of the work to be performed;
 - (iii) Documentation showing that no reasonable price can be obtained from LBE firms;
 - (iv) A statement of why agreements with LBE firms were not reached;
 - (g) a statement of the reason for rejecting any LBE firm which the contractor deemed to be unqualified; and
 - (h) documentation of efforts made to assist the LBE firms contacted that needed assistance in obtaining required insurance.

(E) Unless otherwise waived by the Commissioner with the approval of the Office of Economic and Financial Opportunity, failure of a proposed contractor to provide the information required by paragraphs (C) and (D) above may render the bid non-responsive and the Contract may not be awarded to the bidder. If the contractor states that it will subcontract a specific portion of the work, but can demonstrate despite good faith efforts it cannot achieve its required LBE percentage for subcontracted work until after award of Contract, the Contract may be awarded, subject to a letter of compliance from the contractor stating that it will comply with Administrative Code Section 6-108.1 and subject to approval by the Commissioner. If the contractor has not met its required LBE percentage prior to award, the contractor shall demonstrate that a good faith effort has been made subsequent to award to obtain LBEs on each subcontract until it meets the required percentage.

(F) When a bidder indicates prior to award that no work will be subcontracted, no work may be subcontracted without the prior written approval of the Commissioner, which shall be granted only if the contractor in good faith seeks LBE subcontractors at least six weeks prior to the start of work.

(G) The contractor may not substitute or change any LBE which was identified prior to award of the contract without the written permission of the Commissioner. The contractor shall make a written application to the Commissioner for permission to make such substitution or change, explaining why the contractor needs to change its LBE subcontractor and how the contractor will meet its LBE subcontracting requirement. Copies of such application must be served on the originally identified LBE by certified mail return receipt requested, as well as the proposed substitute LBE. The Commissioner shall determine whether or not to grant the contractor's request for substitution.

38. Bid Submission Requirements

The Bid Submission Requirements are set forth on page 2 of the Bid Booklet.

39. Comptroller's Certificate

This Contract shall not be binding or of any force unless it is registered by the Comptroller in accordance with Section 328 of the City Charter and the Procurement Policy Board Rules. This Contract shall continue in force only after annual appropriation of funds by the City of New York and certification as hereinabove set forth.

40. Procurement Policy Board Rules

This Invitation For Bids is subject to the Rules of the Procurement Policy Board of the City of New York. In the event of a conflict between said Rules and a provision of this Invitation For Bids, the Rules shall take precedence.

41. DDC Safety Requirements

The DDC Safety Requirements apply to the work to be performed pursuant to the Contract. The DDC Safety Requirements are set forth on the following pages.

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
SAFETY REQUIREMENTS

THE DDC SAFETY REQUIREMENTS INCLUDE THE FOLLOWING SECTIONS:

- I. POLICY ON SITE SAFETY**
 - II. PURPOSE**
 - III. DEFINITIONS**
 - IV. RESPONSIBILITIES**
 - V. SAFETY QUESTIONNAIRE**
 - VI. SAFETY PROGRAM AND SITE SAFETY PLAN**
 - VII. KICK-OFF/PRE-CONSTRUCTION MEETINGS AND SAFETY REVIEW**
 - VIII. EVALUATION DURING WORK IN PROGRESS**
 - IX. SAFETY PERFORMANCE EVALUATION**
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I. POLICY ON SITE SAFETY

The City of New York Department of Design and Construction (DDC) is committed to a policy of injury and illness prevention and risk management for construction work that will ensure the safety and health of the workers engaged in the projects and the protection of the general public. Therefore, it is DDC's policy that work carried out by Contractors on DDC jobsites must, at a minimum, comply with applicable federal, state and city laws, rules and regulations, including without limitation:

- U. S. Department of Labor 29 Code of Federal Regulations (CFR) Part 1926 and applicable Sub-parts of Part 1910 – U.S. Occupational Safety and Health Administration (OSHA) including, but not limited to "Respiratory Protection" (29 CFR 1910.134), "Permit-Required Confined Spaces" (29 CFR 1910.146), and "Hazard Communication" (29 CFR 1910.1200);
- New York State Department of Labor Industrial Code Rule 23 – Protection in Construction, Demolition and Excavation;
- New York City Construction Codes, Title 28
- NYC Department of Transportation Title 34 Chapter 2 – Highway Rules
- New York State Department of Labor Industrial Code Rule 753
- NYC Local Law No. 113 (2005) Noise Control Code

In addition, all regulations promulgated by the NYC Department of Transportation, including requirements for Maintenance and Protection of Traffic (MPT), are applicable when contained in contract specifications. While MPT is a significant component of work in our Infrastructure Division, it does not supersede or exempt Contractors from complying with other applicable health and safety standards (for example, excavating and trenching standards, operation of heavy equipment and compliance with City environmental and noise regulations).

I. PURPOSE

The purpose of this policy is to ensure that Contractors perform their work and supervise their employees in accordance with all applicable federal, state and city rules and regulations. Further, Contractors will be expected to minimize or eliminate jobsite and public hazard, through a planning, inspection, auditing and corrective action process. The goal is to control risks so that injuries, illnesses and accidents to contractors' employees, DDC employees and the general public, as well as damage to city-owned and private property, are reduced to the lowest level feasible.

III. DEFINITIONS

Agency Chief Contracting Officer (ACCO): The ACCO shall mean the person delegated authority by the Commissioner to organize and supervise the procurement activity of subordinate Agency staff in conjunction with the CCPO.

Competent Person: As defined by OSHA, an individual who is capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous, or dangerous to employees or the general public, and who has authorization to take prompt corrective measures to eliminate them.

Construction Safety Auditor: A representative of the QACS Construction Safety Unit who provides inspection and assessment services to enhance health and safety on all DDC construction projects. The activities of the Construction Safety Auditor include performing site surveys, reviewing health and safety plans, reviewing construction permits, and rendering technical advice and assistance to DDC Resident Engineers and Project Managers.

Construction Safety Unit: A part of QACS within the Division of Technical Support that assesses contractor safety on DDC jobsites and advises responsible parties of needed corrective actions.

Construction Superintendent: A representative of the contractor responsible for overseeing performance of the required construction work. This individual must engage in sound construction practices, and is responsible to maintain a safe work site. In the case of a project involving the demolition, alteration or new construction of buildings, the Construction Superintendent must be licensed by the NYC Department of Buildings.

Contractor: For purposes of these Safety Requirements, the term "Contractor" shall mean any person or entity that enters into a contract for the performance of construction work on a DDC project. The term "Contractor" shall include any person or entity which enters into any of the following types of contracts: (1) a prime construction contract for a specific project, (2) a prime construction contract using the Job Order Contracting System ("JOCS Contract"), and (3) a subcontract with a CM/Builder ("First Tier Subcontract").

Director - Quality Assurance and Construction Safety (QACS): Responsible for the operations of the QACS Construction Safety Unit and the DDC Site Safety management programs.

Job Hazard Assessment (JHA): A process of identifying site-specific hazards that may be present during construction and establishing the means and methods to reduce or eliminate those hazards.

Jobsite Safety Coordinator: A person designated by the Contractor to be onsite during all activities. This individual shall have received, at a minimum, the OSHA 10-hour construction safety program. Other examples of acceptable training are the 30-hour OSHA Safety and Health Standards for the Construction Industry training program (OSHA 510) or a degree/certificate in a safety and health from a college-level curriculum. This person does not necessarily have to be dedicated full-time to site safety, but must have sufficient experience and authority to undertake corrective action and must qualify to be a competent person. For certain projects, as defined in NYC Construction Codes - Title 28, this person may be required to have a Site Safety Manager's License issued by the NYC DOB.

Qualified Person: As defined by OSHA, an individual who, by possession of a recognized degree, certificate, license or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his or her ability to solve problems relating to the subject matter, the work, or the project. Qualified Persons are required under regulation to address issues pertaining, but without limit, to fall protection, scaffold design and trenching and shoring, among others.

Resident Engineer (RE) / Construction Project Manager (CPM): Representative of the Commissioner duly designated by the Commissioner to be his/her representative at the site of the work. (The RE/CPM may be a third-party consultant, including a CM, retained by DDC.)

Safety Program: Established by the Contractor that covers all operations of that Contractor and establishes the Contractor's overall safety policy, regulatory compliance plan and minimum safety standards. The Safety Program must be submitted prior to the commencement of work at the site and is subject to review and acceptance by the Construction Safety Unit.

Safety Questionnaire: Used by DDC to evaluate Contractor's current and past safety performance. It is required to be completed by all Contractors initially when submitting bids for Construction work, or when being pre-qualified and updated annually or as requested by the DDC.

Site Safety Plan: A site-specific safety plan developed by the Contractor for a specific project. The Site Safety Plan must identify hazards associated with the project, and include specific safety precautions and training appropriate and necessary to complete the work. The Site Safety Plan must be submitted prior to the commencement of work at the site and is subject to review and acceptance by the Construction Safety Unit.

Unsafe or Unhealthy Condition: A condition that could be potentially hazardous to the health and safety of personnel or the public, and/or damaging to equipment, machinery, property or the environment.

Weekly Safety Meetings: Weekly documented jobsite safety meetings, given to all jobsite personnel by contractor, with the purpose of discussing general safety topics and job specific requirements encountered at the DDC work site.

IV. RESPONSIBILITIES

All persons who manage, perform, and provide support for construction projects shall conduct operations in compliance with the requirements identified in this Policy and all applicable governing regulatory agency requirements and guidelines pertaining to safety in construction.

A. Resident Engineer / Construction Project Manager / Construction Manager

- Monitors the issuance of safety-related permits, approvals and drawings and maintains copies on site.
- Monitors construction-related work activities to confirm that they are conducted in accordance with DDC policies and all applicable regulations that pertain to construction safety.
- Maintains documentation and periodically attends weekly safety meeting.
- Notifies the Construction Safety Unit and the ACCO's Insurance and Risk Management Unit of project-related accidents and emergencies, as per DDC's Construction Safety Emergency Protocol.
- Gathers facts related to all accidents and prepares DDC Accident Reports.
- Notifies the Construction Safety Unit of outside regulatory agency inspections and forwards a copy of the inspection report within three days of its receipt.
- Monitors the conditions at the site for conformance with the Site Safety Plan and DDC construction documents.
- Notifies the contractor and DDC in the event that any condition or activity exists that is not in compliance with the Site Safety Plan, applicable federal, state or local codes or any condition that presents a potential risk of injury to the public or workers or possible damage to property.
- Notifies DDC of any emergency condition and directs the contractor to provide such labor, materials, equipment and supervision to abate such conditions.
- Reports gross safety violations to the Construction Safety Unit immediately.

A. Contractors

- Complete a Safety Questionnaire and submit with its bid or as part of a pre-qualification package.
- Provide a Written Job Hazard Assessment (JHA) that identifies expected safety issues of the work to be performed. JHA shall be included with the Site Safety Plan submitted by the contractor.
- Submit a Site Safety Plan and Safety Program within 15 days of issuance of the Notice to Proceed, or as otherwise directed. The Site Safety Plan and Safety Program are subject to review and acceptance by the Construction Safety Unit prior to the commencement of work at the site. The Site Safety Plan shall be revised and updated as necessary.
- Ensure that all employees are aware of the hazards associated with the project through formal and informal training and/or other communications. Conduct and document weekly safety meetings for the duration of the project. Documentation to be provided to the RE/CPM/CM on a monthly basis.
- Name a Construction Superintendent, if required.
- Name a Job Site Safety Coordinator. The Contractor will be required to identify the Job Site Safety Coordinator in the Site Safety Plan.
- Comply with all mandated federal, state and local safety and health rules and regulations.
- Comply with all provisions of the Site Safety Plan.
- As part of the Site Safety Plan, prepare a site specific MPT (if not otherwise provided in the contract documents) and comply with all of its provisions.
- Conduct and document site-specific safety orientation for Contractor personnel to review the hazards associated with the project as identified in the Site Safety Plan and the specific safety procedures and controls that will be used to protect workers, the general public and property. The Job Site Safety Coordinator will conduct this training prior to mobilization and provide documentation to the RE/CPM/CM.
- Provide, replace and adequately maintain at or around the project site, suitable and sufficient signage, lights, barricades and enclosures (fences, sidewalk sheds, netting, bracing, etc.).
- Report unsafe conditions or hazards to the DDC RE/CPM/CM as soon as practical, but no more than 24 hours after discovery, and take action to remove or abate such conditions.

- Report any accident involving injuries to workers or the general public, as well as property damage, to the DDC RE/CPM/CM within two (2) hours.
- Notify the DDC RE/CPM/CM within two (2) hours of the start of an inspection by any regulatory agency personnel, including OSHA.
- Maintain all records pertaining to all required compliance documents and accident and injury reports.
- Respond to DDC recommendations on safety, which shall in no way relieve the Contractor of its responsibilities for safety on the project. The Contractor has sole responsibility for safety.

V. SAFETY QUESTIONNAIRE

DDC requires that all Contractors provide information regarding their current and past safety and environmental performance and programs. This will be accomplished by the use of the DDC Safety Questionnaire. As a part of the bid submittal package, the contractor must submit a completed DDC Safety Questionnaire listing their workers' compensation experience modification rating and OSHA Incidence Rates for the three (3) years prior to the date of the bid opening. DDC may request a Contractor to update its Questionnaire at any time or to provide more detailed information. The Contractor must provide the requested update within 30 days.

The following criteria will be used by DDC in reviewing the Contractor's responsibility, which will be based on the information provided on the questionnaire:

- Criteria 1: OSHA Injury and Illness Rates (I&IR) are no greater than the average for the industry (based on the most current Bureau of Labor Statistics data for the Contractors SIC code); and
- Criteria 2: Insurance workers compensation Experience Modification Rate (EMR) equal to or less than 1.0; and
- Criteria 3: Any willful violations issued by OSHA or NYC DOB within the last three years; and
- Criteria 4: A fatality (worker or member of public) experienced on or near Contractor's worksite within the last three (3) years; and
- Criteria 5: An unacceptable rating by QACS based on past performance on DDC projects; and
- Criteria 6: Contractor has in place an acceptable corporate safety program and its employees shall have completed all documented relative safety training; and
- Criteria 7: Contractor shall provide OSHA Injury Records (currently OSHA 300 Log) for the last three (3) years.

If the Contractor fails to meet the basic criteria listed above, the Construction Safety Unit may request, through the ACCO, more detail concerning the Contractor's safety experience. DDC may request the Contractor to provide copies of, among other things, OSHA records, OSHA and DOB citations, EPA citations and written Safety Programs.

VI. SAFETY PROGRAM AND SITE SAFETY PLAN

Within fifteen (15) days of issuance of the Notice to Proceed, or as otherwise directed, the Contractor shall submit the following: (1) Safety Program, and (2) Site Safety Plan. The Safety Program shall set forth the Contractor's overall safety policy, regulatory compliance plan and minimum safety standard, and the Site Safety Plan shall identify hazards associated with the project, and include specific safety precautions and training appropriate and necessary to complete the work. The Safety Program and the Site Safety Plan are subject to review and acceptance by the Construction Safety Unit prior to the commencement of work at the site. Failure by the contractor to submit an acceptable Site Safety Plan and Safety Program shall be grounds for default.

The Site Safety Plan shall apply to all Contractor and subcontractor operations, and shall have at a minimum, the following elements. Each element shall be described in a separate section in the written document. It may be necessary to modify the basic format for certain unique or high-risk projects (such as tunnels or high-rise construction). The basic elements are as follows:

1. **Responsibility and Organization:** Identify the person or persons with authority and responsibility for implementing the Site Safety Plan. Provide an organization chart and define levels of authority and responsibility. Identify the Competent Person, the Construction Superintendent (if required), the Job Safety Coordinator and the Qualified Person required for this project.
2. **Communication:** Establish a system for communicating with employees and subcontractors on matters relating to worker and public safety and health and environmental protection, including provisions designed to encourage employees to inform the employer of hazards at the worksite without fear of reprisal. An emergency response notification protocol is to be established that also includes after hours contact numbers. The plan must also include provisions for weekly safety meetings held by the Job Site Safety Coordinator.
3. **Job Hazard Assessment:** A written document submitted by the contractor, used to identify expected job hazards and public safety risks and state the specific means and methods to reduce, control or eliminate those hazards. This part of the Site Safety Plan must also include how on-going evaluations of those risks and hazards will be carried out, including plans for periodic inspections to identify unsafe conditions, work practices and public safety hazards.
4. **Accident/Exposure Investigation:** Establish a procedure to investigate and report occupational and public injury or illness, property damage, vehicle accidents or other mishaps.
5. **Hazard Correction:** Establish means, methods and/or procedures for correcting unsafe or unhealthy conditions that might be exposing both the public and workers to hazards. Corrective actions must be taken immediately when observed or discovered. Should an imminent hazard exist which cannot be immediately abated without endangering employees, the public and/or property, remove or restrict all exposed persons from the area except those necessary to correct the existing condition. Employees necessary to correct the hazardous condition shall be provided the necessary safeguards. When corrective actions cannot be taken immediately, temporary measures should be taken until such time permanent measures are taken to eliminate the potential risks or hazards.
6. **Training:** Describe site-specific hazard training programs. In addition to the required safety orientation, additional site specific training, in the form of required weekly safety meetings, will be required. Contractors must also initiate training when: a) new employees are hired; b) employees are given new job assignments for which training has not been previously received; c) new substances, processes, procedures or equipment are introduced that might represent a new public or worker hazard; d) the employee is made aware of a new or previously unrecognized hazard; e) new supervisors are assigned to familiarize themselves with the safety and health hazards to which employees under their immediate direction and control may be exposed; and f) after a jobsite incident or accident has occurred.
7. **Recordkeeping:** Establish procedures to maintain records of scheduled and periodic inspections, weekly safety meetings, and training records. Updated records shall be maintained at the jobsite, accessible to the Construction Safety Auditors and/or Quality Assurance Auditors/RE/CPM, and retained in accordance with DDC policy.

The most critical component of the Site Safety Plan is the Job Hazard Assessment section. This section must address specific hazards that are anticipated throughout the project. Each Site Safety Plan must address, at a minimum:

- Public and pedestrian safety
- Fall protection
- Electrical hazards
- Scaffolding
- Fire protection
- Emergency notification & response
- Housekeeping / debris removal
- Dust control
- Maintenance and protection of traffic
- Trenching and excavating
- Heavy equipment operations
- Material / equipment storage
- Environmental contamination
- Sheeting and shoring
- Alcohol and Drug Abuse Policy

The following additional hazards must be addressed, if applicable, based on the contract safety specifications and/or the results of the JHA (the list is not all-inclusive):

- Basic Personal Protective Equipment
- Compressed Air
- Compressed Gas Cylinders
- Cranes, Derricks and Hoists
- Demolition
- Electrical safety
- Excavations and Trenching
- Fall Protection – Floor openings/Stairways
- Fall Protection – Guardrails Toe boards etc
- Fall Protection – Leading Edge
- Fall Protection – Personal Fall Protection Devices
- Fire Protection and Fire Prevention
- Hazard Communication (RIGHT TO KNOW)
- Hazardous Energy & Lock Out / Tag Out
- Housekeeping/ Sanitation
- Maintenance and Protection of Traffic (MPT)
- Man Lifts /Aerial Lifts
- Marine Operations
- Motor Vehicle Safety
- Overhead Power lines
- Permit Required Confined Space
- Portable Ladders
- Powered Actuated Tools
- Powered Material Handling Equipment
- Scaffolds – Mobile
- Scaffolds – Stationary
- Scaffolds – Suspended
- Slings
- Steel Erection
- Welding and Cutting (Hot Work)
- Airborne Contaminants – Particulates – General
- Asbestos
- Blood borne Pathogens
- Hearing Protection
- Lead in Construction
- Mercury in Construction
- PCB's
- Respiratory Protection
- Silica
- Thermal Stress
- West Nile Virus
- Rodents and Vermin
- Noise Mitigation Plan

Certain DDC programs, such as Job Order Contracting System (JOCS), may not necessarily require Site Safety Plans. The JOCS contractor will be required to submit a Safety Program. In addition, certain DDC Operating Units may establish program or client-specific safety requirements. The contractor's Site Safety Plan must address such program or client specific safety requirements.

VII. KICK-OFF MEETINGS/PRE-CONSTRUCTION AND SAFETY REVIEW

As part of the construction kick-off meeting, a Site Safety Plan review will be part of the agenda. A QACS representative will participate in this meeting with the contractor prior to the start of the project for the purpose of:

- A. Reviewing the safety issues detailed in the contract.
- B. Reviewing the Site Safety Plan.
- C. Reviewing any new issues or information that was not previously addressed.
- D. Discussing planned inspections and audits of the site by DDC personnel.

VIII. EVALUATION DURING WORK IN PROGRESS

The Contractor's adherence to these Safety Requirements will be monitored throughout the project. This will be accomplished by the following:

- A. Use of a safety checklist by a representative of the Construction Safety Unit or other designated DDC representative or Consultant during regular, unannounced inspections of the job site. Field Exit Conferences will be held with the RE/CPM, Contractor Superintendents or Safety Representatives.
- B. The RE/CPM will continually monitor the safety and environmental performance of the contractor's employees and work methods. Deficiencies shall be brought to the attention of the contractor's representative on site for immediate correction. The DDC representative will maintain a written record of these deficiencies and forward them to the Construction Safety Unit on a weekly basis. Any critical deficiencies shall be immediately reported to QACS phone# (718) 391-1624 or (718) 391-1911.
- C. If the Contractor's safety performance during the project is not up to DDC standards (safety performance measure, accident/incident rate, etc.) the Director- QACS, or designee will meet with the Contractor's safety representative, the DDC project manager, the RE/CPM, or the DDC Environmental Specialist (if environmental issues are involved). The purpose of this meeting is to 1) determine the level of non-compliance; 2) explain and clarify the safety/environmental provisions; 3) agree on a future course of action to correct the deficiencies.
- D. If the deficiencies continue to occur with inadequate attention by the contractor, this shall, among other remedies available, be grounds for default.
- E. The contractor shall inform the Construction Safety Unit and ACCO Insurance and Risk Management Unit of all medical injuries or illnesses that require doctors' treatment resulting from an on-the-job incident within 24 hours of the occurrence. The Construction Safety Unit shall also be immediately informed of all fatalities, catastrophic accidents with more than one employee hospitalized, any injuries to members of the general public and major equipment damage (e.g., property damage, equipment rollovers, loads dropped from crane). QACS shall maintain a record of all contractor injuries and illnesses during the project and provide regular reports to the Agency.
- F. The Construction Safety Unit shall be immediately notified at the start of any NYS-DOL/ NYC-COSH/ OSHA/ EPA inspections. The Director of Quality Assurance & Construction Safety shall maintain a log of all contractor OSHA/EPA inspections and citations during the project.

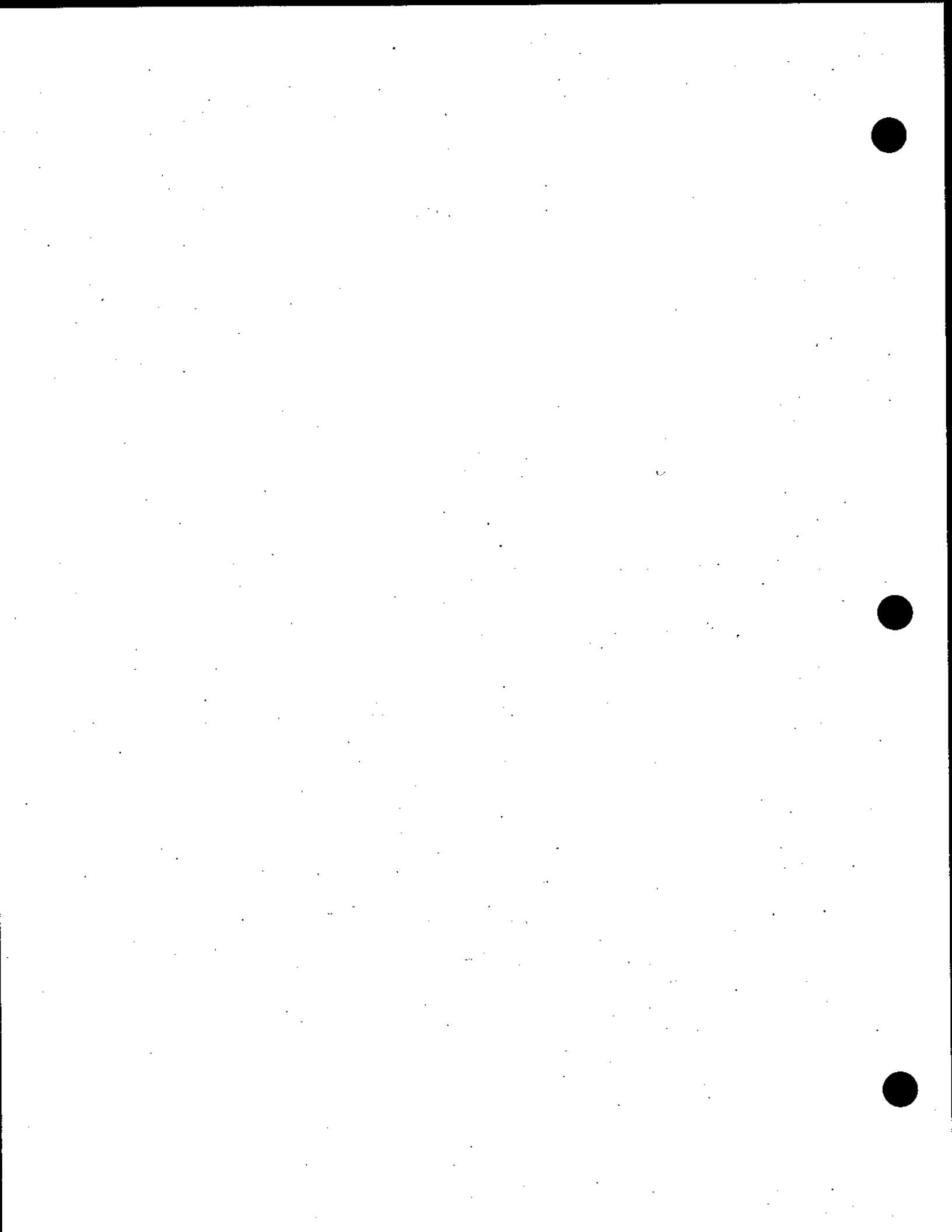
IX. SAFETY PERFORMANCE EVALUATION

The contractor's safety record, including all DDC inspection results, will be considered as part of the Contractor's performance evaluation at the conclusion of the project. Poor safety performance during the course of the project shall be a reason to rate a Contractor unsatisfactory which will be reflected in the City's Vendex system and will be considered for future procurement actions as set forth in the City's Procurement Policy Board Rules.

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CITY OF NEW YORK
STANDARD CONSTRUCTION CONTRACT

December 2013



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WITNESSETH:

The parties, in consideration of the mutual agreements contained herein, agree as follows:

**CHAPTER I
THE CONTRACT AND DEFINITIONS**

ARTICLE 1. THE CONTRACT

1.1 Except for titles, subtitles, headings, running headlines, tables of contents and indices (all of which are printed herein merely for convenience), the following, except for such portions thereof as may be specifically excluded, shall be deemed to be part of this Contract:

1.1.1 All provisions required by law to be inserted in this Contract, whether actually inserted or not;

1.1.2 The Contract Drawings and Specifications;

1.1.3 The General Conditions and Special Conditions, if any;

1.1.4 The Contract;

1.1.5 The Information for Bidders; Request for Proposals; Notice of Solicitation and Proposal For Bids; Bid or Proposal, and, if used, the Bid Booklet;

1.1.6 All Addenda issued prior to the receipt of the bids; the Notice of Award; Performance and Payment Bonds, if required; and the Notice to Proceed or the Order to Work.

1.2 Should any conflict occur in or between the Drawings and Specifications, the Contractor shall be deemed to have estimated the most expensive way of doing the Work, unless the Contractor shall have asked for and obtained a decision in writing from the Commissioner of the Agency that is entering into this Contract, before the submission of its bid, as to what shall govern.

ARTICLE 2. DEFINITIONS

2.1 The following words and expressions, or pronouns used in their stead, shall, wherever they appear in this Contract, be construed as follows, unless a different meaning is clear from the context:

2.1.1 "Addendum" or "Addenda" shall mean the additional Contract provisions and/or technical clarifications issued in writing by the Commissioner prior to the receipt of bids.

2.1.2 "Agency" shall mean a city, county, borough or other office, position, department, division, bureau, board or commission, or a corporation, institution or agency of government, the expenses of which are paid in whole or in part from the City treasury.

2.1.3 "Agency Chief Contracting Officer" (ACCO) shall mean a person delegated authority by the Commissioner to organize and supervise the procurement activity of subordinate Agency staff in conjunction with the CCPO, or his/her duly authorized representative.

2.1.4 "Allowance" shall mean a sum of money which the Agency may include in the total amount of the Contract for such specific contingencies as the Agency believes may be necessary to complete the Work, e.g., lead or asbestos remediation, and for which the Contractor will be paid on the basis of stipulated unit prices or a formula set forth in the Contract or negotiated between the parties provided, however, that if the Contractor is not directed to use the Allowance, the Contractor shall have no right to such money and it shall be deducted from the total amount of the Contract.

2.1.5 "City" shall mean the City of New York.

2.1.6 "City Chief Procurement Officer" (CCPO) shall mean a person delegated authority by the Mayor to coordinate and oversee the procurement activity of Mayoral agency staff, including the ACCO and any offices which have oversight responsibility for the procurement of construction, or his/her duly authorized representative.

2.1.7 "Commissioner" shall mean the head of the Agency that has entered into this Contract, or his/her duly authorized representative.

2.1.8 "Comptroller" shall mean the Comptroller of the City of New York.

2.1.9 "Contract" or "Contract Documents" shall mean each of the various parts of the contract referred to in Article 1 hereof, both as a whole and severally.

2.1.10 "Contract Drawings" shall mean only those drawings specifically entitled as such and listed in the Specifications or in any Addendum, or any drawings furnished by the Commissioner, pertaining or supplemental thereto.

2.1.11 "Contract Work" shall mean everything required to be furnished and done by the Contractor by any one or more of the parts of the Contract referred to in Article 1, except Extra Work as hereinafter defined.

2.1.12 "Contractor" shall mean the entity which executed this Contract, whether a corporation, firm, partnership, joint venture, individual, or any combination thereof, and its, their, his/her successors, personal representatives, executors, administrators, and assigns, and any person, firm, partnership, joint venture, individual, or corporation which shall at any time be substituted in the place of the Contractor under this Contract.

2.1.13 "Days" shall mean calendar days, except where otherwise specified.

2.1.14 "Engineer" or "Architect" or "Project Manager" shall mean the person so designated in writing by the Commissioner in the Notice to Proceed or the Order to Work to act as such in relation to this Contract, including a private Architect or Engineer or Project Manager, as the case may be. Subject to written approval by the Commissioner, the Engineer, Architect or Project Manager may designate an authorized representative.

2.1.15 "Engineering Audit Officer" (EAO) shall mean the person so designated by the Commissioner to perform responsible auditing functions hereunder.

2.1.16 "Extra Work" shall mean Work other than that required by the Contract at the time of award which is authorized by the Commissioner pursuant to Chapter VI of this Contract.

2.1.17 "Federal-Aid Contract" shall mean a contract in which the United States (federal) Government provides financial funding as so designated in the Information for Bidders.

- 2.1.18 "Final Acceptance" shall mean final written acceptance of all the Work by the Commissioner, a copy of which shall be sent to the Contractor.
- 2.1.19 "Final Approved Punch List" shall mean a list, approved pursuant to Article 14.2.2, specifying those items of Work to be completed by the Contractor after Substantial Completion and dates for the completion of each item of Work.
- 2.1.20 "Law" or "Laws" shall mean the Constitution of the State of New York, the New York City Charter, the New York City Administrative Code, a statute of the United States or of the State of New York, a local law of the City of New York, any ordinance, rule or regulation having the force of law, or common law.
- 2.1.21 "Materialman" shall mean any corporation, firm, partnership, joint venture, or individual, other than employees of the Contractor, who or which contracts with the Contractor or any Subcontractor, to fabricate or deliver, or who actually fabricates or delivers, plant, materials or equipment to be incorporated in the Work.
- 2.1.22 "Means and Methods of Construction" shall mean the labor, materials, temporary structures, tools, plant, and construction equipment, and the manner and time of their use, necessary to accomplish the result intended by this Contract.
- 2.1.23 "Notice to Proceed" or "Order to Work" shall mean the written notice issued by the Commissioner specifying the time for commencement of the Work and the Engineer, Architect or Project Manager.
- 2.1.24 "Other Contractor(s)" shall mean any contractor (other than the entity which executed this Contract or its Subcontractors) who or which has a contract with the City for work on or adjacent to the building or Site of the Work.
- 2.1.25 "Payroll Taxes" shall mean State Unemployment Insurance (SUI), Federal Unemployment Insurance (FUI), and payments pursuant to the Federal Insurance Contributions Act (FICA).
- 2.1.26 "Project" shall mean the public improvement to which this Contract relates.
- 2.1.27 "Procurement Policy Board" (PPB) shall mean the Agency of the City of New York whose function is to establish comprehensive and consistent procurement policies and rules which shall have broad application throughout the City.
- 2.1.28 "Required Quantity" in a unit price Contract shall mean the actual quantity of any item of Work or materials which is required to be performed or furnished in order to comply with the Contract.
- 2.1.29 "Resident Engineer" shall mean the representative of the Commissioner duly designated by the Commissioner to be his/her representative at the site of the Work.
- 2.1.30 "Site" shall mean the area upon or in which the Contractor's operations are carried on, and such other areas adjacent thereto as may be designated as such by the Engineer.
- 2.1.31 "Small Tools" shall mean items that are ordinarily required for a worker's job function, including but not limited to, equipment that ordinarily has no licensing, insurance

or substantive storage costs associated with it; such as circular and chain saws, impact drills, threaders, benders, wrenches, socket tools, etc.

2.1.32 "Specifications" shall mean all of the directions, requirements, and standards of performance applying to the Work as hereinafter detailed and designated under the Specifications.

2.1.33 "Subcontractor" shall mean any person, firm or corporation, other than employees of the Contractor, who or which contracts with the Contractor or with its subcontractors to furnish, or actually furnishes labor, or labor and materials, or labor and equipment, or superintendence, supervision and/or management at the Site. Wherever the word Subcontractor appears, it shall also mean sub-Subcontractor.

2.1.34 "Substantial Completion" shall mean the written determination by the Engineer that the Work required under this Contract is substantially, but not entirely, complete and the approval of the Final Approved Punch List.

2.1.35 "Work" shall mean all services required to complete the Project in accordance with the Contract Documents, including without limitation, labor, material, superintendence, management, administration, equipment, and incidentals, and obtaining any and all permits, certifications and licenses as may be necessary and required to complete the Work, and shall include both Contract Work and Extra Work.

CHAPTER II THE WORK AND ITS PERFORMANCE

ARTICLE 3. CHARACTER OF THE WORK

3.1 Unless otherwise expressly provided in the Contract Drawings, Specifications, and Addenda, the Work shall be performed in accordance with the best modern practice, utilizing, unless otherwise specified in writing, new and unused materials of standard first grade quality and workmanship and design of the highest quality, to the satisfaction of the Commissioner.

ARTICLE 4. MEANS AND METHODS OF CONSTRUCTION

4.1 Unless otherwise expressly provided in the Contract Drawings, Specifications, and Addenda, the Means and Methods of Construction shall be such as the Contractor may choose; subject, however, to the Engineer's right to reject the Means and Methods of Construction proposed by the Contractor which in the opinion of the Engineer:

4.1.1 Will constitute or create a hazard to the Work, or to persons or property; or

4.1.2 Will not produce finished Work in accordance with the terms of the Contract; or

4.1.3 Will be detrimental to the overall progress of the Project.

4.2 The Engineer's approval of the Contractor's Means and Methods of Construction, or his/her failure to exercise his/her right to reject such means or methods, shall not relieve the Contractor of its obligation to complete the Work as provided in this Contract; nor shall the exercise of such right to reject create a cause of action for damages.

ARTICLE 5. COMPLIANCE WITH LAWS

5.1 The Contractor shall comply with all Laws applicable to this Contract and to the Work to be done hereunder.

5.2 Procurement Policy Board Rules: This Contract is subject to the Rules of the PPB ("PPB Rules") in effect at the time of the bid opening for this Contract. In the event of a conflict between the PPB Rules and a provision of this Contract, the PPB Rules shall take precedence.

5.3 Noise Control Code provisions.

5.3.1 In accordance with the provisions of Section 24-216(b) of the Administrative Code of the City ("Administrative Code"), Noise Abatement Contract Compliance, devices and activities which will be operated, conducted, constructed or manufactured pursuant to this Contract and which are subject to the provisions of the City Noise Control Code shall be operated, conducted, constructed, or manufactured without causing a violation of the Administrative Code. Such devices and activities shall incorporate advances in the art of noise control development for the kind and level of noise emitted or produced by such devices and activities, in accordance with regulations issued by the Commissioner of the City Department of Environmental Protection.

5.3.2 The Contractor agrees to comply with Section 24-219 of the Administrative Code and implementing rules codified at 15 Rules of the City of New York ("RCNY") Section 28-100 *et seq.* In accordance with such provisions, the Contractor, if the Contractor is the responsible party under such regulations, shall prepare and post a Construction Noise Mitigation Plan at each Site, in which the Contractor shall certify that all construction tools and equipment have been maintained so that they operate at normal manufacturers operating specifications. If the Contractor cannot make this certification, it must have in place an Alternative Noise Mitigation Plan approved by the City Department of Environmental Protection. In addition, the Contractor's certified Construction Noise Mitigation Plan is subject inspection by the City Department of Environmental Protection in accordance with Section 28-101 of Title 15 of RCNY. No Contract Work may take place at a Site unless there is a Construction Noise Mitigation Plan or approved Alternative Noise Mitigation Plan in place. In addition, the Contractor shall create and implement a noise mitigation training program. Failure to comply with these requirements may result in fines and other penalties pursuant to the applicable provisions of the Administrative Code and RCNY.

5.4 Ultra Low Sulfur Diesel Fuel: In accordance with the provisions of Section 24-163.3 of the Administrative Code, the Contractor specifically agrees as follows:

5.4.1 Definitions. For purposes of this Article 5.4, the following definitions apply:

5.4.1(a) "Contractor" means any person or entity that enters into a Public Works Contract with a City Agency, or any person or entity that enters into an agreement with such person or entity, to perform work or provide labor or services related to such Public Works Contract.

5.4.1(b) "Motor Vehicle" means any self-propelled vehicle designed for transporting persons or property on a street or highway.

5.4.1(c) "Nonroad Engine" means an internal combustion engine (including the fuel system) that is not used in a Motor Vehicle or a vehicle used solely for competition, or that is not subject to standards promulgated under Section 7411 or Section 7521 of

Title 42 of the United States Code, except that this term shall apply to internal combustion engines used to power generators, compressors or similar equipment used in any construction program or project.

5.4.1(d) "Nonroad Vehicle" means a vehicle that is powered by a Nonroad Engine, fifty (50) horsepower and greater, and that is not a Motor Vehicle or a vehicle used solely for competition, which shall include, but not be limited to, excavators, backhoes, cranes, compressors, generators, bulldozers, and similar equipment, except that this term shall not apply to horticultural maintenance vehicles used for landscaping purposes that are powered by a Nonroad Engine of sixty-five (65) horsepower or less and that are not used in any construction program or project.

5.4.1(e) "Public Works Contract" means a contract with a City Agency for a construction program or project involving the construction, demolition, restoration, rehabilitation, repair, renovation, or abatement of any building, structure, tunnel, excavation, roadway, park or bridge; a contract with a City Agency for the preparation for any construction program or project involving the construction, demolition, restoration, rehabilitation, repair, renovation, or abatement of any building, structure, tunnel, excavation, roadway, park or bridge; or a contract with a City Agency for any final work involved in the completion of any construction program or project involving the construction, demolition, restoration, rehabilitation, repair, renovation, or abatement of any building, structure, tunnel, excavation, roadway, park or bridge.

5.4.1(f) "Ultra Low Sulfur Diesel Fuel" means diesel fuel that has a sulfur content of no more than fifteen parts per million (15 ppm).

5.4.2 Ultra Low Sulfur Diesel Fuel

5.4.2(a) All Contractors shall use Ultra Low Sulfur Diesel Fuel in diesel-powered Nonroad Vehicles in the performance of this Contract.

5.4.2(b) Notwithstanding the requirements of Article 5.4.2(a), Contractors may use diesel fuel that has a sulfur content of no more than thirty parts per million (30 ppm) to fulfill the requirements of this Article 5.4.2, where the Commissioner of the City Department of Environmental Protection ("DEP Commissioner") has issued a determination that a sufficient quantity of Ultra Low Sulfur Diesel Fuel is not available to meet the needs of Agencies and Contractors. Any such determination shall expire after six (6) months unless renewed.

5.4.2(c) Contractors shall not be required to comply with this Article 5.4.2 where the City Agency letting this Contract makes a written finding, which is approved, in writing, by the DEP Commissioner, that a sufficient quantity of Ultra Low Sulfur Diesel Fuel, or diesel fuel that has a sulfur content of no more than thirty parts per million (30 ppm) is not available to meet the requirements of Section 24-163.3 of the Administrative Code, provided that such Contractor in its fulfillment of the requirements of this Contract, to the extent practicable, shall use whatever quantity of Ultra Low Sulfur Diesel Fuel or diesel fuel that has a sulfur content of no more than thirty parts per million (30 ppm) is available. Any finding made pursuant to this Article 5.4.2(c) shall expire after sixty (60) Days, at which time the requirements of this Article 5.4.2 shall be in full force and effect unless the City Agency renews the finding in writing and such renewal is approved by the DEP Commissioner.

5.4.2(d) Contractors may check on determinations and approvals issued by the DEP Commissioner pursuant to Section 24-163.3 of the Administrative Code, if any, at www.dep.nyc.gov or by contacting the City Agency letting this Contract.

5.4.2(e) The requirements of this Article 5.4.2 do not apply where they are precluded by federal or State funding requirements or where the Contract is an emergency procurement.

5.4.3 Best Available Technology

5.4.3(a) All Contractors shall utilize the best available technology for reducing the emission of pollutants for diesel-powered Nonroad Vehicles in the performance of this Contract. For determinations of best available technology for each type of diesel-powered Nonroad Vehicle, Contractors shall comply with the regulations of the City Department of Environmental Protection, as and when adopted, Chapter 14 of Title 15 of the Rules of the City of New York (RCNY). The Contractor shall fully document all steps in the best available technology selection process and shall furnish such documentation to the City Agency or the DEP Commissioner upon request. The Contractor shall retain all documentation generated in the best available technology selection process for as long as the selected best available technology is in use.

5.4.3(b) No Contractor shall be required to replace best available technology for reducing the emission of pollutants or other authorized technology utilized for a diesel-powered Nonroad Vehicle in accordance with the provisions of this Article 5.4.3 within three (3) years of having first utilized such technology for such vehicle.

5.4.3(c) This Article 5.4.3 shall not apply to any vehicle used to satisfy the requirements of a specific Public Works Contract for fewer than twenty (20) Days.

5.4.3(d) The Contractor shall not be required to comply with this Article 5.4.3 with respect to a diesel-powered Nonroad Vehicle under the following circumstances:

5.4.3(d)(i) Where the City Agency makes a written finding, which is approved, in writing, by the DEP Commissioner, that the best available technology for reducing the emission of pollutants as required by this Article 5.4.3 is unavailable for such vehicle, the Contractor shall use whatever technology for reducing the emission of pollutants, if any, is available and appropriate for such vehicle.

5.4.3(d)(ii) Where the DEP Commissioner has issued a written waiver based upon the Contractor having demonstrated to the DEP Commissioner that the use of the best available technology for reducing the emission of pollutants might endanger the operator of such vehicle or those working near such vehicle, due to engine malfunction, the Contractor shall use whatever technology for reducing the emission of pollutants, if any, is available and appropriate for such vehicle, which would not endanger the operator of such vehicle or those working near such vehicle.

5.4.3(d)(iii) In determining which technology to use for the purposes of Articles 5.4.3(d)(i) and 5.4.3(d)(ii) above, the Contractor shall primarily consider the reduction in emissions of particulate matter and secondarily consider the reduction in emissions of nitrogen oxides associated with the use of such

technology, which shall in no event result in an increase in the emissions of either such pollutant.

5.4.3(d)(iv) The Contractor shall submit requests for a finding or a waiver pursuant to this Article 5.4.3(d) in writing to the DEP Commissioner, with a copy to the ACCO of the City Agency letting this Contract. Any finding or waiver made or issued pursuant to Articles 5.4.3(d)(i) and 5.4.3(d)(ii) above shall expire after one hundred eighty (180) Days, at which time the requirements of Article 5.4.3(a) shall be in full force and effect unless the City Agency renews the finding, in writing, and the DEP Commissioner approves such finding, in writing, or the DEP Commissioner renews the waiver, in writing.

5.4.3(e) The requirements of this Article 5.4.3 do not apply where they are precluded by federal or State funding requirements or where the Contract is an emergency procurement.

5.4.4 Section 24-163 of the Administrative Code. The Contractor shall comply with Section 24-163 of the Administrative Code related to the idling of the engines of motor vehicles while parking.

5.4.5 Compliance

5.4.5(a) The Contractor's compliance with Article 5.4 may be independently monitored. If it is determined that the Contractor has failed to comply with any provision of Article 5.4, any costs associated with any independent monitoring incurred by the City shall be reimbursed by the Contractor.

5.4.5(b) Any Contractor who violates any provision of Article 5.4, except as provided in Article 5.4.5(c) below, shall be liable for a civil penalty between the amounts of one thousand (\$1,000) and ten thousand (\$10,000) dollars, in addition to twice the amount of money saved by such Contractor for failure to comply with Article 5.4.

5.4.5(c) No Contractor shall make a false claim with respect to the provisions of Article 5.4 to a City Agency. Where a Contractor has been found to have done so, such Contractor shall be liable for a civil penalty of twenty thousand (\$20,000) dollars, in addition to twice the amount of money saved by such Contractor in association with having made such false claim.

5.4.6 Reporting

5.4.6(a) For all Public Works Contracts covered by this Article 5.4, the Contractor shall report to the City Agency the following information:

5.4.6(a)(i) The total number of diesel-powered Nonroad Vehicles used to fulfill the requirements of this Public Works Contract;

5.4.6(a)(ii) The number of such Nonroad Vehicles that were powered by Ultra Low Sulfur Diesel Fuel;

5.4.6(a)(iii) The number of such Nonroad Vehicles that utilized the best available technology for reducing the emission of pollutants, including a breakdown by vehicle model and the type of technology;

5.4.6(a)(iv) The number of such Nonroad Vehicles that utilized such other authorized technology in accordance with Article 5.4.3, including a breakdown by vehicle model and the type of technology used for each such vehicle;

5.4.6(a)(v) The locations where such Nonroad Vehicles were used; and

5.4.6(a)(vi) Where a determination is in effect pursuant to Article 5.4.2(b) or 5.4.2(c), detailed information concerning the Contractor's efforts to obtain Ultra Low Sulfur Diesel Fuel or diesel fuel that has a sulfur content of no more than thirty parts per million (30 ppm).

5.4.6(b) The Contractor shall submit the information required by Article 5.4.6(a) at the completion of Work under the Public Works Contract and on a yearly basis no later than August 1 throughout the term of the Public Works Contract. The yearly report shall cover Work performed during the preceding fiscal year (July 1 - June 30).

5.5 Ultra Low Sulfur Diesel Fuel. In accordance with the Coordinated Construction Act for Lower Manhattan, as amended:

5.5.1 Definitions. For purposes of this Article 5.5, the following definitions apply:

5.5.1(a) "Lower Manhattan" means the area to the south of and within the following lines: a line beginning at a point where the United States pierhead line in the Hudson River as it exists now or may be extended would intersect with the southerly line of West Houston Street in the Borough of Manhattan extended, thence easterly along the southerly side of West Houston Street to the southerly side of Houston Street, thence easterly along the southerly side of Houston Street to the southerly side of East Houston Street, thence northeasterly along the southerly side of East Houston Street to the point where it would intersect with the United States pierhead line in the East River as it exists now or may be extended, including tax lots within or immediately adjacent thereto.

5.5.1(b) "Lower Manhattan Redevelopment Project" means any project in Lower Manhattan that is funded in whole or in part with federal or State funding, or any project intended to improve transportation between Lower Manhattan and the two air terminals in the City known as LaGuardia Airport and John F. Kennedy International Airport, or between Lower Manhattan and the air terminal in Newark known as Newark Liberty International Airport, and that is funded in whole or in part with federal funding.

5.5.1(c) "Nonroad Engine" means an internal combustion engine (including the fuel system) that is not used in a Motor Vehicle or a vehicle used solely for competition, or that is not subject to standards promulgated under Section 7411 or Section 7521 of Title 42 of the United States Code, except that this term shall apply to internal combustion engines used to power generators, compressors or similar equipment used in any construction program or project.

5.5.1(d) "Nonroad Vehicle" means a vehicle that is powered by a Nonroad Engine, fifty (50) horsepower (HP) and greater, and that is not a Motor Vehicle or a vehicle used solely for competition, which shall include, but not be limited to, excavators, backhoes, cranes, compressors, generators, bulldozers, and similar equipment, except

that this terms shall not apply to horticultural maintenance vehicles used for landscaping purposes that are powered by a Nonroad Engine of sixty-five (65) HP or less and that are not used in any construction program or project.

5.5.1(e) "Ultra Low Sulfur Diesel Fuel" means diesel fuel that has a sulfur content of no more than fifteen parts per million (15 ppm).

5.5.2 Requirements. Contractors and Subcontractors are required to use only Ultra Low Sulfur Diesel Fuel to power the diesel-powered Nonroad Vehicles with engine HP rating of fifty (50) HP and above used on a Lower Manhattan Redevelopment Project and, where practicable, to reduce the emission of pollutants by retrofitting such Nonroad Vehicles with oxidation catalysts, particulate filters, or technology that achieves lowest particulate matter emissions.

5.6 Pesticides. In accordance with Section 17-1209 of the Administrative Code, to the extent that the Contractor or any Subcontractor applies pesticides to any property owned or leased by the City, the Contractor, and any Subcontractor shall comply with Chapter 12 of the Administrative Code.

5.7 Waste Treatment, Storage, and Disposal Facilities and Transporters. In connection with the Work, the Contractor and any Subcontractor shall use only those waste treatment, storage, and disposal facilities and waste transporters that possess the requisite license, permit or other governmental approval necessary to treat, store, dispose, or transport the waste, materials or hazardous substances.

5.8 Environmentally Preferable Purchasing. The Contractor shall ensure that products purchased or leased by the Contractor or any Subcontractor for the Work that are not specified by the City or are submitted as equivalents to a product specified by the City comply with the requirements of the New York City Environmentally Preferable Purchasing Program contained in Chapter 11 of Title 43 of the RCNY, pursuant to Chapter 3 of Title 6 of the Administrative Code.

ARTICLE 6. INSPECTION

6.1 During the progress of the Work and up to the date of Final Acceptance, the Contractor shall at all times afford the representatives of the City every reasonable, safe, and proper facility for inspecting all Work done or being done at the Site and also for inspecting the manufacture or preparation of materials and equipment at the place of such manufacture or preparation.

6.2 The Contractor's obligation hereunder shall include the uncovering or taking down of finished Work and its restoration thereafter; provided, however, that the order to uncover, take down and restore shall be in writing, and further provided that if Work thus exposed proves satisfactory, and if the Contractor has complied with Article 6.1, such uncovering or taking down and restoration shall be considered an item of Extra Work to be paid for in accordance with the provisions of Article 26. If the Work thus exposed proves unsatisfactory, the City has no obligation to compensate the Contractor for the uncovering, taking down or restoration.

6.3 Inspection and approval by the Commissioner, the Engineer, Project Manager, or Resident Engineer, of finished Work or of Work being performed, or of materials and equipment at the place of manufacture or preparation, shall not relieve the Contractor of its obligation to perform the Work in strict accordance with the Contract. Finished or unfinished Work not found to be in strict accordance with the Contract shall be replaced as directed by the Engineer, even though such Work may have been previously approved and paid for. Such corrective Work is Contract Work and shall not be deemed Extra Work.

6.4 Rejected Work and materials shall be promptly taken down and removed from the Site, which must at all times be kept in a reasonably clean and neat condition.

**ARTICLE 7: PROTECTION OF WORK AND OF PERSONS
AND PROPERTY; NOTICES AND INDEMNIFICATION**

7.1 During the performance of the Work and up to the date of Final Acceptance, the Contractor shall be under an absolute obligation to protect the finished and unfinished Work against any damage, loss, injury, theft and/or vandalism and in the event of such damage, loss, injury, theft and/or vandalism, it shall promptly replace and/or repair such Work at the Contractor's sole cost and expense, as directed by the Resident Engineer. The obligation to deliver finished Work in strict accordance with the Contract prior to Final Acceptance shall be absolute and shall not be affected by the Resident Engineer's approval of, or failure to prohibit, the Means and Methods of Construction used by the Contractor.

7.2 During the performance of the Work and up to the date of Final Acceptance, the Contractor shall take all reasonable precautions to protect all persons and the property of the City and of others from damage, loss or injury resulting from the Contractor's, and/or its Subcontractors' operations under this Contract. The Contractor's obligation to protect shall include the duty to provide, place or replace, and adequately maintain at or about the Site suitable and sufficient protection such as lights, barricades, and enclosures.

7.3 The Contractor shall comply with the notification requirements set forth below in the event of any loss, damage or injury to Work, persons or property, or any accidents arising out of the operations of the Contractor and/or its Subcontractors under this Contract.

7.3.1 The Contractor shall make a full and complete report in writing to the Resident Engineer within three (3) Days after the occurrence.

7.3.2 The Contractor shall also send written notice of any such event to all insurance carriers that issued potentially responsive policies (including commercial general liability insurance carriers for events relating to the Contractor's own employees) no later than twenty (20) days after such event and again no later than twenty (20) days after the initiation of any claim and/or action resulting therefrom. Such notice shall contain the following information: the number of the insurance policy, the name of the Named Insured, the date and location of the incident, and the identity of the persons injured or property damaged. For any policy on which the City and/or the Engineer, Architect, or Project Manager are Additional Insureds, such notice shall expressly specify that "this notice is being given on behalf of the City of New York as Additional Insured, such other Additional Insureds, as well as the Named Insured."

7.3.2(a) Whenever such notice is sent under a policy on which the City is an Additional Insured, the Contractor shall provide copies of the notice to the Comptroller, the Commissioner and the City Corporation Counsel. The copy to the Comptroller shall be sent to the Insurance Unit, NYC Comptroller's Office, 1 Centre Street - Room 1222, New York, New York, 10007. The copy to the Commissioner shall be sent to the address set forth in Schedule A of the General Conditions. The copy to the City Corporation Counsel shall be sent to Insurance Claims Specialist, Affirmative Litigation Division, New York City Law Department, 100 Church Street, New York, New York 10007.

7.3.2(b) If the Contractor fails to provide any of the foregoing notices to any appropriate insurance carrier(s) in a timely and complete manner, the Contractor shall indemnify the City for all losses, judgments, settlements, and expenses, including reasonable attorneys' fees, arising from an insurer's disclaimer of coverage citing late notice by or on behalf of the City.

7.4 To the fullest extent permitted by law, the Contractor shall defend, indemnify, and hold the City, its employees, and officials (the "Indemnitees") harmless against any and all claims (including but not limited to claims asserted by any employee of the Contractor and/or its Subcontractors) and costs and expenses of whatever kind (including but not limited to payment or reimbursement of attorneys' fees and disbursements) allegedly arising out of or in any way related to the operations of the Contractor and/or its Subcontractors in the performance of this Contract or from the Contractor's and/or its Subcontractors' failure to comply with any of the provisions of this Contract or of the Law. Such costs and expenses shall include all those incurred in defending the underlying claim and those incurred in connection with the enforcement of this Article 7.4 by way of cross-claim, third-party claim, declaratory action or otherwise. The parties expressly agree that the indemnification obligation hereunder contemplates (1) full indemnity in the event of liability imposed against the Indemnitees without negligence and solely by reason of statute, operation of Law or otherwise; and (2) partial indemnity in the event of any actual negligence on the part of the Indemnitees either causing or contributing to the underlying claim (in which case, indemnification will be limited to any liability imposed over and above that percentage attributable to actual fault whether by statute, by operation of Law, or otherwise). Where partial indemnity is provided hereunder, all costs and expenses shall be indemnified on a pro rata basis.

7.4.1 Indemnification under Article 7.4 or any other provision of the Contract shall operate whether or not Contractor or its Subcontractors have placed and maintained the insurance specified under Article 22.

7.5 The provisions of this Article 7 shall not be deemed to create any new right of action in favor of third parties against the Contractor or the City.

CHAPTER III TIME PROVISIONS

ARTICLE 8. COMMENCEMENT AND PROSECUTION OF THE WORK

8.1 The Contractor shall commence the Work on the date specified in the Notice to Proceed or the Order to Work. The time for performance of the Work under the Contract shall be computed from the date specified in the Notice to Proceed or the Order to Work. **TIME BEING OF THE ESSENCE** to the City, the Contractor shall thereafter prosecute the Work diligently, using such Means and Methods of Construction as are in accord with Article 4 herein and as will assure its completion not later than the date specified in this Contract, or on the date to which the time for completion may be extended.

ARTICLE 9. PROGRESS SCHEDULES

9.1 To enable the Work to be performed in an orderly and expeditious manner, the Contractor, within fifteen (15) Days after the Notice to Proceed or Order to Work, unless otherwise directed by the Engineer, shall submit to the Engineer a proposed progress schedule based on the Critical Path Method in the form of a bar graph or in such other form as specified by the Engineer, and monthly cash flow requirements, showing:

9.1.1 The anticipated time of commencement and completion of each of the various operations to be performed under this Contract; and

9.1.2 The sequence and interrelation of each of these operations with the others and with those of other related contracts; and

9.1.3 The estimated time required for fabrication or delivery, or both, of all materials and equipment required for the Work, including the anticipated time for obtaining required approvals pursuant to Article 10; and

9.1.4 The estimated amount in dollars the Contractor will claim on a monthly basis.

9.2 The proposed schedule shall be revised as directed by the Engineer, until finally approved by the Engineer, and after such approval, subject to the provisions of Article 11, shall be strictly adhered to by the Contractor.

9.3 If the Contractor shall fail to adhere to the approved progress schedule, or to the schedule as revised pursuant to Article 11, it shall promptly adopt such other or additional Means and Methods of Construction, at its sole cost and expense, as will make up for the time lost and will assure completion in accordance with the approved progress schedule. The approval by the City of a progress schedule which is shorter than the time allotted under the Contract shall not create any liability for the City if the approved progress schedule is not met.

9.4 The Contractor will not receive any payments until the proposed progress schedule is submitted.

ARTICLE 10. REQUESTS FOR INFORMATION OR APPROVAL

10.1 From time to time as the Work progresses and in the sequence indicated by the approved progress schedule, the Contractor shall submit to the Engineer a specific request in writing for each item of information or approval required by the Contractor. These requests shall state the latest date upon which the information or approval is actually required by the Contractor, and shall be submitted in a reasonable time in advance thereof to provide the Engineer a sufficient time to act upon such submissions, or any necessary re-submissions thereof.

10.2 The Contractor shall not have any right to an extension of time on account of delays due to the Contractor's failure to submit requests for the required information or the required approval in accordance with the above requirements.

ARTICLE 11. NOTICE OF CONDITIONS CAUSING DELAY AND DOCUMENTATION OF DAMAGES CAUSED BY DELAY

11.1 After the commencement of any condition which is causing or may cause a delay in completion of the Work, including conditions for which the Contractor may be entitled to an extension of time, the following notifications and submittals are required:

11.1.1 Within seven (7) Days after the commencement of such condition, the Contractor must notify the Engineer in writing of the existence, nature and effect of such condition upon the approved progress schedule and the Work, and must state why and in what respects, if any, the condition is causing or may cause a delay.

11.1.2 If the Contractor shall claim to be sustaining damages for delay as provided for in this Article 11, within forty-five (45) Days from the time such damages are first incurred, and every thirty (30) Days thereafter for as long as such damages are being incurred, the Contractor shall submit to the Commissioner verified written statements of the details and the amounts of such damages, together with documentary evidence of such damages, ("statement of delay damages") as further detailed in Article 11.6. The Contractor may submit any of the above statements within such additional time as may be granted by the Commissioner in writing upon written request therefor. On failure of the Contractor to strictly comply with all of the foregoing provisions, such claims shall be deemed waived and no right to recover on such claims shall exist. Damages that the Contractor may claim in any action arising under or by reason of this Contract shall not be different from or in excess of the statements made and documentation provided pursuant to this Article 11.

11.1.3 Within 60 days of submission of the final verified statement of claims pursuant to Article 44, the Commissioner shall make a determination as to whether a compensable delay has occurred and, if so, the amount of compensation due the Contractor. Notwithstanding the above, the Commissioner may make a determination as to whether a compensable delay has occurred at any time after the Contractor's first submission of a statement of delay damages provided, however, that the amount of compensation due to the Contractor will not be determined until the Commissioner determines that the Work is delayed after the date set for substantial completion.

11.2 Failure of the Contractor to strictly comply with the requirements of Article 11.1.1 may, in the discretion of the Commissioner, be deemed sufficient cause to deny any extension of time on account of delay arising out of such condition. Failure of the Contractor to strictly comply with the requirements of Articles 11.1.1 and 11.1.2 shall be deemed a conclusive waiver by the Contractor of any and all claims for damages for delay arising from such condition and no right to recover on such claims shall exist.

11.3 When appropriate and directed by the Engineer, the progress schedule shall be revised by the Contractor until finally approved by the Engineer. The revised progress schedule must be strictly adhered to by the Contractor.

11.4 Compensable Delays

11.4.1 The Contractor agrees to make claim only for additional costs attributable to delay in the performance of this Contract necessarily extending the time for completion of the Work or resulting from acceleration directed by the Commissioner and required to maintain the Project schedule, occasioned solely by any act or omission to act of the City listed below. The Contractor also agrees that delay from any other cause shall be compensated, if at all, solely by an extension of time to complete the performance of the Work.

11.4.1.1 The failure of the City to take reasonable measures to coordinate and progress the Work, except that the City shall not be responsible for the Contractor's obligation to coordinate and progress the Work of its Subcontractors.

11.4.1.2 Extended delays attributable to the City in the review or issuance of change orders, in shop drawing reviews and approvals or as a result of the cumulative impact of multiple change orders, which have a verifiable impact on Project costs.

11.4.1.3 The unavailability of the Site for an extended period of time that significantly affects the scheduled completion of the Contract.

- 11.4.1.4 The issuance by the Engineer of a stop work order relative to a substantial portion of the Work for a period exceeding thirty (30) Days, that was not brought about through any action or omission of the Contractor.
- 11.4.1.5 Differing site conditions that were neither known nor reasonably ascertainable on a pre-bid inspection of the Site or review of the bid documents or other publicly available sources, and that are not ordinarily encountered in the Project's geographical area or neighborhood or in the type of Work to be performed.
- 11.4.1.6 Delays caused by the City's bad faith or its willful, malicious, or grossly negligent conduct;
- 11.4.1.7 Delays not contemplated by the parties;
- 11.4.1.8 Delays so unreasonable that they constitute an intentional abandonment of the Contract by the City; and
- 11.4.1.9 Delays resulting from the City's breach of a fundamental obligation of the Contract.

11.4.2 No claim may be made for any alleged delay in Substantial Completion of the Work by a date earlier than the date of Substantial Completion provided for in Schedule A unless there is a provision in the Contract providing for additional compensation for early completion. No claim may be made for any alleged delay in Substantial Completion of the Work if the work is substantially completed by the date of Substantial Completion provided for in Schedule A unless acceleration has been directed by the Commissioner to meet the date of Substantial Completion set forth in Schedule A.

11.4.3 The provisions of this Article 11 apply only to claims for additional costs attributable to delay and do not preclude determinations by the Commissioner allowing reimbursements for additional costs for Extra Work pursuant to Articles 25 and 26 of this Contract. To the extent that any cost attributable to delay is reimbursed as part of a change order, no additional claim for compensation under this Article 11 shall be allowed.

11.5 Non-Compensable Delays. The Contractor agrees to make no claim for, and is deemed to have included in its bid prices for the various items of the Contract, the extra/additional costs attributable to any delays caused by or attributable to the items set forth below. For such items, the Contractor shall be compensated, if at all, solely by an extension of time to complete the performance of the Work, in accordance with the provisions of Article 13. Such extensions of time will be granted, if at all, pursuant to the grounds set forth in Article 13.3.

11.5.1 The acts or omissions of any third parties, including but not limited to Other Contractors, public/ governmental bodies (other than City Agencies), utilities or private enterprises, who are disclosed in the Contract Documents or are ordinarily encountered or generally recognized as related to the Work;

11.5.2 Any situation which was within the contemplation of the parties at the time of entering into the Contract, including any delay indicated or disclosed in the Contract Documents or generally recognized as related to the nature of the Work, and/or the existence of any facility or appurtenance owned, operated or maintained by any third party, as indicated or disclosed in the Contract Documents or ordinarily encountered or generally recognized as related to the nature of the Work;

11.5.3 Restraining orders, injunctions or judgments issued by a court which were caused by a Contractor's submission, action or inaction or by a Contractor's Means and Methods of

Construction, or by third parties, unless such order, injunction or judgment was the result of an action or omission by the City;

11.5.4 Any labor boycott, strike, picketing, lockout or similar situation;

11.5.5 Any shortages of supplies or materials, or unavailability of equipment, required by the Contract Work;

11.5.6 Climatic conditions, storms, floods, droughts, tidal waves, fires, hurricanes, earthquakes, landslides or other catastrophes or acts of God, or acts of war or of the public enemy or terrorist acts, including the City's reasonable responses thereto; and

11.5.7 Extra Work which does not significantly affect the overall completion of the Contract, reasonable delays in the review or issuance of change orders or field orders and/or in shop drawing reviews or approvals.

11.6 Required Content of Submission of Statement of Delay Damages

11.6.1 In the verified written statement of delay damages required by Article 11.1.2, the following information shall be provided by the Contractor:

11.6.1.1 For each delay, the start and end dates of the claimed periods of delay and, in addition, a description of the operations that were delayed, an explanation of how they were delayed, and the reasons for the delay, including identifying the applicable act or omission of the City listed in Article 11.4.

11.6.1.2 A detailed factual statement of the claim providing all necessary dates, locations and items of Work affected by the claim.

11.6.1.3 The amount of additional compensation sought and a breakdown of that amount into categories as described in Article 26.2, subject to the limitations set forth in Article 11.7.

11.6.1.4 Any additional information requested by the Commissioner.

11.7 Recoverable Costs

11.7.1 Delay damages may be recoverable for the following costs actually and necessarily incurred in the performance of the Work:

11.7.1.1 Direct labor, including payroll taxes (subject to statutory wage caps) and supplemental benefits, based on time and materials records;

11.7.1.2 Necessary materials (including transportation to the Site), based on time and material records;

11.7.1.3 Reasonable rental value of necessary plant and equipment other than small tools, plus fuel/energy costs according to the applicable formula set forth in Articles 26.2.4 and/or 26.2.8, based on time and material records;

11.7.1.4 Insurance and bond costs;

11.7.1.5 Extended field office costs;

11.7.1.6 Extended Site overhead; and

11.7.1.7 Extended home office overhead.

11.7.2 Recoverable Subcontractor Costs. When the Work is performed by a Subcontractor, the Contractor may be paid the actual and necessary costs of such subcontracted Work as outlined above in Articles 11.7.1.1 through 11.7.1.6, and an

additional overhead of five (5%) percent of the costs outlined in Articles 11.7.1.1 through 11.7.1.3.

11.7.3 Non-Recoverable Costs. The parties agree that the City will have no liability for the following items and the Contractor agrees it shall make no claim for the following items:

11.7.3.1 Profit, or loss of anticipated or unanticipated profit;

11.7.3.2 Consequential damages, including but not limited to interest on monies in dispute, including interest which is paid on such monies, loss of bonding capacity, bidding opportunities, or interest in investment, or any resulting insolvency;

11.7.3.3 Indirect costs or expenses of any nature;

11.7.3.4 Direct or indirect costs attributable to performance of Work where the Contractor, because of situations or conditions within its control, has not progressed the Work in a satisfactory manner; and

11.7.3.5 Attorneys' fees and dispute and claims preparation expenses.

11.8 Determinations under this Article 11 are not subject to the jurisdiction of the Contract Dispute Resolution Board pursuant to the dispute resolution process set forth in Article 27.

11.9 If the parties agree, pursuant to Article 11.1.3 above, that a compensable delay has occurred and agree on the amount of compensation, payment may be made pursuant to a written change order. Payment pursuant to such change order is subject to pre-audit by the Engineering Audit Officer, and may be post-audited by the Comptroller and/or the Agency.

ARTICLE 12. COORDINATION WITH OTHER CONTRACTORS

12.1 During the progress of the Work, Other Contractors may be engaged in performing other work or may be awarded other contracts for additional work on this Project. In that event, the Contractor shall coordinate the Work to be done hereunder with the work of such Other Contractors and the Contractor shall fully cooperate with such Other Contractors and carefully fit its own Work to that provided under other contracts as may be directed by the Engineer. The Contractor shall not commit or permit any act which will interfere with the performance of work by any Other Contractors.

12.2 If the Engineer determines that the Contractor is failing to coordinate its Work with the work of Other Contractors as the Engineer has directed, then the Commissioner shall have the right to withhold any payments otherwise due hereunder until the Contractor completely complies with the Engineer's directions.

12.3 The Contractor shall notify the Engineer in writing if any Other Contractor on this Project is failing to coordinate its work with the Work of this Contract. If the Engineer finds such charges to be true, the Engineer shall promptly issue such directions to the Other Contractor with respect thereto as the situation may require. The City shall not, however, be liable for any damages suffered by any Other Contractor's failure to coordinate its work with the Work of this Contract or by reason of the Other Contractor's failure to promptly comply with the directions so issued by the Engineer, or by reason of any Other Contractor's default in performance, it being understood that the City does not guarantee the responsibility or continued efficiency of any contractor. The Contractor agrees to make no claim against

the City for any damages relating to or arising out of any directions issued by the Engineer pursuant to this Article 12 (including but not limited to the failure of any Other Contractor to comply or promptly comply with such directions), or the failure of the Engineer to issue any directions, or the failure of any Other Contractor to coordinate its work, or the default in performance of any Other Contractor.

12.4 The Contractor shall indemnify and hold the City harmless from any and all claims or judgments for damages and from costs and expenses to which the City may be subjected or which it may suffer or incur by reason of the Contractor's failure to comply with the Engineer's directions promptly; and the Comptroller shall have the right to exercise the powers reserved in Article 23 with respect to any claims which may be made for damages due to the Contractor's failure to comply with the Engineer's directions promptly. Insofar as the facts and Law relating to any claim would preclude the City from being completely indemnified by the Contractor, the City shall be partially indemnified by the Contractor to the fullest extent provided by Law.

12.5 Should the Contractor sustain any damage through any act or omission of any Other Contractor having a contract with the City for the performance of work upon the Site or of work which may be necessary to be performed for the proper prosecution of the Work to be performed hereunder, or through any act or omission of a subcontractor of such Other Contractor, the Contractor shall have no claim against the City for such damage, but shall have a right to recover such damage from the Other Contractor under the provision similar to the following provisions which apply to this Contract and have been or will be inserted in the contracts with such Other Contractors:

12.5.1 Should any Other Contractor having or who shall hereafter have a contract with the City for the performance of work upon the Site sustain any damage through any act or omission of the Contractor hereunder or through any act or omission of any Subcontractor of the Contractor, the Contractor agrees to reimburse such Other Contractor for all such damages and to defend at its own expense any action based upon such claim and if any judgment or claim (even if the allegations of the action are without merit) against the City shall be allowed the Contractor shall pay or satisfy such judgment or claim and pay all costs and expenses in connection therewith and agrees to indemnify and hold the City harmless from all such claims. Insofar as the facts and Law relating to any claim would preclude the City from being completely indemnified by the Contractor, the City shall be partially indemnified by the Contractor to the fullest extent provided by Law.

12.6 The City's right to indemnification hereunder shall in no way be diminished, waived or discharged by its recourse to assessment of liquidated damages as provided in Article 15, or by the exercise of any other remedy provided for by Contract or by Law.

ARTICLE 13. EXTENSION OF TIME FOR PERFORMANCE

13.1 If performance by the Contractor is delayed for a reason set forth in Article 13.3, the Contractor may be allowed a reasonable extension of time in conformance with this Article 13 and the PPB Rules.

13.2 Any extension of time may be granted only by the ACCO or by the Board for the Extension of Time (hereafter "Board") (as set forth below) upon written application by the Contractor.

13.3 Grounds for Extension: If such application is made, the Contractor shall be entitled to an extension of time for delay in completion of the Work caused solely:

13.3.1 By the acts or omissions of the City, its officials, agents or employees; or

13.3.2 By the act or omissions of Other Contractors on this Project; or

13.3.3 By supervening conditions entirely beyond the control of either party hereto (such as, but not limited to, acts of God or the public enemy, excessive inclement weather, war or other national emergency making performance temporarily impossible or illegal, or strikes or labor disputes not brought about by any act or omission of the Contractor).

13.3.4 The Contractor shall, however, be entitled to an extension of time for such causes only for the number of Days of delay which the ACCO or the Board may determine to be due solely to such causes, and then only if the Contractor shall have strictly complied with all of the requirements of Articles 9 and 10.

13.4 The Contractor shall not be entitled to receive a separate extension of time for each of several causes of delay operating concurrently, but, if at all, only for the actual period of delay in completion of the Work as determined by the ACCO or the Board, irrespective of the number of causes contributing to produce such delay. If one of several causes of delay operating concurrently results from any act, fault or omission of the Contractor or of its Subcontractors or Materialmen, and would of itself (irrespective of the concurrent causes) have delayed the Work, no extension of time will be allowed for the period of delay resulting from such act, fault or omission.

13.5 The determination made by the ACCO or the Board on an application for an extension of time shall be binding and conclusive on the Contractor.

13.6 The ACCO or the Board acting entirely within their discretion may grant an application for an extension of time for causes of delay other than those herein referred.

13.7 Permitting the Contractor to continue with the Work after the time fixed for its completion has expired, or after the time to which such completion may have been extended has expired, or the making of any payment to the Contractor after such time, shall in no way operate as a waiver on the part of the City of any of its rights under this Contract.

13.8 Application for Extension of Time:

13.8.1 Before the Contractor's time extension request will be considered, the Contractor shall notify the ACCO of the condition which allegedly has caused or is causing the delay, and shall submit a written application to the ACCO identifying:

13.8.1(a) The Contractor; the registration number; and Project description;

13.8.1(b) Liquidated damage assessment rate, as specified in the Contract;

13.8.1(c) Original total bid price;

13.8.1(d) The original Contract start date and completion date;

13.8.1(e) Any previous time extensions granted (number and duration); and

13.8.1(f) The extension of time requested.

13.8.2 In addition, the application for extension of time shall set forth in detail:

13.8.2(a) The nature of each alleged cause of delay in completing the Work;

13.8.2(b) The date upon which each such cause of delay began and ended and the number of Days attributable to each such cause;

13.8.2(c) A statement that the Contractor waives all claims except for those delineated in the application, and the particulars of any claims which the Contractor does not agree to waive. For time extensions for Substantial Completion and final completion payments, the application shall include a detailed statement of the dollar amounts of each element of claim item reserved; and

13.8.2(d) A statement indicating the Contractor's understanding that the time extension is granted only for purposes of permitting continuation of Contract performance and payment for Work performed and that the City retains its right to conduct an investigation and assess liquidated damages as appropriate in the future.

13.9 Analysis and Approval of Time Extensions:

13.9.1 For time extensions for partial payments, a written determination shall be made by the ACCO who may, for good and sufficient cause, extend the time for the performance of the Contract as follows:

13.9.1(a) If the Work is to be completed within six (6) months, the time for performance may be extended for sixty (60) Days;

13.9.1(b) If the Work is to be completed within less than one (1) year but more than six (6) months, an extension of ninety (90) Days may be granted;

13.9.1(c) If the Contract period exceeds one (1) year, besides the extension granted in Article 13.9.1(b), an additional thirty (30) Days may be granted for each multiple of six (6) months involved beyond the one (1) year period; or

13.9.1(d) If exceptional circumstances exist, the ACCO may extend the time for performance beyond the extensions in Articles 13.9.1(a), 13.9.1(b), and 13.9.1(c). In that event, the ACCO shall file with the Mayor's Office of Contract Services a written explanation of the exceptional circumstances.

13.9.2 For extensions of time for Substantial Completion and final completion payments, the Engineer, in consultation with the ACCO, shall prepare a written analysis of the delay (including a preliminary determination of the causes of delay, the beginning and end dates for each such cause of delay, and whether the delays are excusable under the terms of this Contract). The report shall be subject to review by and approval of the Board, which shall have authority to question its analysis and determinations and request additional facts or documentation. The report as reviewed and made final by the Board shall be made a part of the Agency contract file. Neither the report itself nor anything contained therein shall operate as a waiver or release of any claim the City may have against the Contractor for either actual or liquidated damages.

13.9.3 Approval Mechanism for Time Extensions for Substantial Completion or Final Completion Payments: An extension shall be granted only with the approval of the Board which is comprised of the ACCO of the Agency, the City Corporation Counsel, and the Comptroller, or their authorized representatives.

13.9.4 Neither the granting of any application for an extension of time to the Contractor or any Other Contractor on this Project nor the papers, records or reports related to any application for or grant of an extension of time or determination related thereto shall be referred to or offered in evidence by the Contractor or its attorneys in any action or proceeding.

13.10 No Damage for Delay: The Contractor agrees to make no claim for damages for delay in the performance of this Contract occasioned by any act or omission to act of the City or any of its representatives, except as provided for in Article 11.

ARTICLE 14. COMPLETION AND FINAL ACCEPTANCE OF THE WORK

14.1 Date for Substantial Completion: The Contractor shall substantially complete the Work within the time fixed in Schedule A of the General Conditions, or within the time to which such Substantial Completion may be extended.

14.2 Determining the Date of Substantial Completion: The Work will be deemed to be substantially complete when the two conditions set forth below have been met.

14.2.1 Inspection: The Engineer has inspected the Work and has made a written determination that it is substantially complete.

14.2.2 Approval of Final Approved Punch List and Date for Final Acceptance: Following inspection of the Work, the Engineer shall furnish the Contractor with a final punch list, specifying all items of Work to be completed and proposing dates for the completion of each specified item of Work. The Contractor shall then submit in writing to the Engineer within ten (10) Days of the Engineer furnishing the final punch list either acceptance of the dates or proposed alternative dates for the completion of each specified item of Work. If the Contractor proposes alternative dates, then, within a reasonable time after receipt, the Engineer, in a written notification to the Contractor, shall approve the Contractor's completion dates or, if they are unable to agree, the Engineer shall establish dates for the completion of each item of Work. If the Contractor neither accepts the dates nor proposes alternative dates within ten (10) Days, the schedule proposed by the Engineer shall be deemed accepted. The latest completion date specified shall be the date for Final Acceptance of the Work.

14.3 Date of Substantial Completion. The date of approval of the Final Approved Punch List, shall be the date of Substantial Completion. The date of approval of the Final Approved Punch List shall be either (a) if the Contractor approves the final punch list and proposed dates for completion furnished by the Engineer, the date of the Contractor's approval; or (b) if the Contractor neither accepts the dates nor proposes alternative dates, ten (10) Days after the Engineer furnishes the Contractor with a final punch list and proposed dates for completion; or (c) if the Contractor proposes alternative dates, the date that the Engineer sends written notification to the Contractor either approving the Contractor's proposed alternative dates or establishing dates for the completion for each item of Work.

14.4 Determining the Date of Final Acceptance: The Work will be accepted as final and complete as of the date of the Engineer's inspection if, upon such inspection, the Engineer finds that all items on the Final Approved Punch List are complete and no further Work remains to be done. The Commissioner will then issue a written determination of Final Acceptance.

14.5 Request for Inspection: Inspection of the Work by the Engineer for the purpose of Substantial Completion or Final Acceptance shall be made within ten (10) Days after receipt of the Contractor's written request therefor.

14.6 Request for Re-inspection: If upon inspection for the purpose of Substantial Completion or Final Acceptance, the Engineer determines that there are items of Work still to be performed, the Contractor shall promptly perform them and then request a re-inspection. If upon re-inspection, the Engineer determines that the Work is substantially complete or finally accepted, the date of such re-inspection shall be the date of Substantial Completion or Final Acceptance. Re-inspection by the Engineer shall be made within ten (10) Days after receipt of the Contractor's written request therefor.

14.7 Initiation of Inspection by the Engineer: If the Contractor does not request inspection or re-inspection of the Work for the purpose of Substantial Completion or Final Acceptance, the Engineer may initiate such inspection or re-inspection.

ARTICLE 15. LIQUIDATED DAMAGES

15.1 In the event the Contractor fails to substantially complete the Work within the time fixed for such Substantial Completion in Schedule A of the General Conditions, plus authorized time extensions, or if the Contractor, in the sole determination of the Commissioner, has abandoned the Work, the Contractor shall pay to the City the sum fixed in Schedule A of the General Conditions, for each and every Day that the time consumed in substantially completing the Work exceeds the time allowed therefor; which said sum, in view of the difficulty of accurately ascertaining the loss which the City will suffer by reason of delay in the Substantial Completion of the Work hereunder, is hereby fixed and agreed as the liquidated damages that the City will suffer by reason of such delay, and not as a penalty. This Article 15 shall also apply to the Contractor whether or not the Contractor is defaulted pursuant to Chapter X of this Contract. Neither the failure to assess liquidated damages nor the granting of any time extension shall operate as a waiver or release of any claim the City may have against the Contractor for either actual or liquidated damages.

15.2 Liquidated damages received hereunder are not intended to be nor shall they be treated as either a partial or full waiver or discharge of the City's right to indemnification, or the Contractor's obligation to indemnify the City, or to any other remedy provided for in this Contract or by Law.

15.3 The Commissioner may deduct and retain out of the monies which may become due hereunder, the amount of any such liquidated damages; and in case the amount which may become due hereunder shall be less than the amount of liquidated damages suffered by the City, the Contractor shall be liable to pay the difference.

ARTICLE 16. OCCUPATION OR USE PRIOR TO COMPLETION

16.1 Unless otherwise provided for in the Specifications, the Commissioner may take over, use, occupy or operate any part of the Work at any time prior to Final Acceptance, upon written notification to the Contractor. The Engineer shall inspect the part of the Work to be taken over, used, occupied, or operated, and will furnish the Contractor with a written statement of the Work, if any, which remains to be performed on such part. The Contractor shall not object to, nor interfere with, the Commissioner's decision to exercise the rights granted by Article 16. In the event the Commissioner takes over, uses, occupies, or operates any part of the Work:

16.1.1 the Engineer shall issue a written determination of Substantial Completion with respect to such part of the Work;

16.1.2 the Contractor shall be relieved of its absolute obligation to protect such part of the unfinished Work in accordance with Article 7;

16.1.3 the Contractor's guarantee on such part of the Work shall begin on the date of such use by the City; and;

16.1.4 the Contractor shall be entitled to a return of so much of the amount retained in accordance with Article 21 as it relates to such part of the Work, except so much thereof as may be retained under Articles 24 and 44.

CHAPTER IV SUBCONTRACTS AND ASSIGNMENTS

ARTICLE 17. SUBCONTRACTS

17.1 The Contractor shall not make subcontracts totaling an amount more than the percentage of the total Contract price fixed in Schedule A of the General Conditions, without prior written permission from the Commissioner. All subcontracts made by the Contractor shall be in writing. No Work may be performed by a Subcontractor prior to the Contractor entering into a written subcontract with the Subcontractor and complying with the provisions of this Article 17.

17.2 Before making any subcontracts, the Contractor shall submit a written statement to the Commissioner giving the name and address of the proposed Subcontractor; the portion of the Work and materials which it is to perform and furnish; the cost of the subcontract; the VENDEX questionnaire if required; the proposed subcontract if requested by the Commissioner; and any other information tending to prove that the proposed Subcontractor has the necessary facilities, skill, integrity, past experience, and financial resources to perform the Work in accordance with the terms and conditions of this Contract.

17.3 In addition to the requirements in Article 17.2, Contractor is required to list the Subcontractor in the web based Subcontractor Reporting System through the City's Payee Information Portal (PIP), available at www.nyc.gov/pip.¹ For each Subcontractor listed, Contractor is required to provide the following information: maximum contract value, description of Subcontractor's Work, start and end date of the subcontract and identification of the Subcontractor's industry. Thereafter, Contractor will be required to report in the system the payments made to each Subcontractor within 30 days of making the payment. If any of the required information changes throughout the Term of the Contract, Contractor will be required to revise the information in the system.

Failure of the Contractor to list a Subcontractor and/or to report Subcontractor payments in a timely fashion may result in the Commissioner declaring the Contractor in default of the Contract and will subject Contractor to liquidated damages in the amount of \$100 per day for each day that the Contractor fails to identify a Subcontractor along with the required information about the Subcontractor and/or fails to report payments to a Subcontractor, beyond the time frames set forth herein or in the notice from the City. Article 15 shall govern the issue of liquidated damages.

¹ In order to use the new system, a PIP account will be required. Detailed instructions on creating a PIP account and using the new system are also available at www.nyc.gov/pip. Additional assistance with PIP may be obtained by emailing the Financial Information Services Agency Help Desk at pip@fisa.nyc.gov.

17.4 If an approved Subcontractor elects to subcontract any portion of its subcontract, the proposed sub-subcontract shall be submitted in the same manner as directed above.

17.5 The Commissioner will notify the Contractor in writing whether the proposed Subcontractor is approved. If the proposed Subcontractor is not approved, the Contractor may submit another proposed Subcontractor unless the Contractor decides to do the Work. No Subcontractor shall be permitted to enter or perform any work on the Site unless approved.

17.6 Before entering into any subcontract hereunder, the Contractor shall provide the proposed Subcontractor with a complete copy of this document and inform the proposed Subcontractor fully and completely of all provisions and requirements of this Contract relating either directly or indirectly to the Work to be performed and the materials to be furnished under such subcontract, and every such Subcontractor shall expressly stipulate that all labor performed and materials furnished by the Subcontractor shall strictly comply with the requirements of this Contract.

17.7 Documents given to a prospective Subcontractor for the purpose of soliciting the Subcontractor's bid shall include either a copy of the bid cover or a separate information sheet setting forth the Project name, the Contract number (if available), the Agency (as noted in Article 2.1.6), and the Project's location.

17.8 The Commissioner's approval of a Subcontractor shall not relieve the Contractor of any of its responsibilities, duties, and liabilities hereunder. The Contractor shall be solely responsible to the City for the acts or defaults of its Subcontractor and of such Subcontractor's officers, agents, and employees, each of whom shall, for this purpose, be deemed to be the agent or employee of the Contractor to the extent of its subcontract.

17.9 If the Subcontractor fails to maintain the necessary facilities, skill, integrity, past experience, and financial resources (other than due to the Contractor's failure to make payments where required) to perform the Work in accordance with the terms and conditions of this Contract, the Contractor shall promptly notify the Commissioner and replace such Subcontractor with a newly approved Subcontractor in accordance with this Article 17.

17.10 The Contractor shall be responsible for ensuring that all Subcontractors performing Work at the Site maintain all insurance required by Law.

17.11 The Contractor shall promptly, upon request, file with the Engineer a conformed copy of the subcontract and its cost. The subcontract shall provide the following:

17.11.1 Payment to Subcontractors: The agreement between the Contractor and its Subcontractor shall contain the same terms and conditions as to method of payment for Work, labor, and materials, and as to retained percentages, as are contained in this Contract.

17.11.2 Prevailing Rate of Wages: The agreement between the Contractor and its Subcontractor shall include the prevailing wage rates and supplemental benefits to be paid in accordance with Labor Law Section 220.

17.11.3 Section 6-123 of the Administrative Code: Pursuant to the requirements of Section 6-123 of the Administrative Code, every agreement between the Contractor and a Subcontractor in excess of fifty thousand (\$50,000) dollars shall include a provision that the Subcontractor shall not engage in any unlawful discriminatory practice as defined in Title VIII of the Administrative Code (Section 8-101 *et seq.*).

17.11.4 All requirements required pursuant to federal and/or state grant agreement(s), if applicable to the Work.

17.12 The Commissioner may deduct from the amounts certified under this Contract to be due to the Contractor, the sum or sums due and owing from the Contractor to the Subcontractors according to the terms of the said subcontracts, and in case of dispute between the Contractor and its Subcontractor, or Subcontractors, as to the amount due and owing, the Commissioner may deduct and withhold from the amounts certified under this Contract to be due to the Contractor such sum or sums as may be claimed by such Subcontractor, or Subcontractors, in a sworn affidavit, to be due and owing until such time as such claim or claims shall have been finally resolved.

17.13 On contracts where performance bonds and payment bonds are executed, the Contractor shall include on each requisition for payment the following data: Subcontractor's name, value of the subcontract, total amount previously paid to Subcontractor for Work previously requisitioned, and the amount, including retainage, to be paid to the Subcontractor for Work included in the requisition.

17.14 On Contracts where performance bonds and payment bonds are not executed, the Contractor shall include with each requisition for payment submitted hereunder, a signed statement from each and every Subcontractor and/or Materialman for whom payment is requested in such requisition. Such signed statement shall be on the letterhead of the Subcontractor and/or Materialman for whom payment is requested and shall (i) verify that such Subcontractor and/or Materialman has been paid in full for all Work performed and/or material supplied to date, exclusive of any amount retained and any amount included on the current requisition, and (ii) state the total amount of retainage to date, exclusive of any amount retained on the current requisition.

ARTICLE 18. ASSIGNMENTS

18.1 The Contractor shall not assign, transfer, convey or otherwise dispose of this Contract, or the right to execute it, or the right, title or interest in or to it or any part thereof, or assign, by power of attorney or otherwise any of the monies due or to become due under this Contract, unless the previous written consent of the Commissioner shall first be obtained thereto, and the giving of any such consent to a particular assignment shall not dispense with the necessity of such consent to any further or other assignments.

18.2 Such assignment, transfer, conveyance or other disposition of this Contract shall not be valid until filed in the office of the Commissioner and the Comptroller, with the written consent of the Commissioner endorsed thereon or attached thereto.

18.3 Failure to obtain the previous written consent of the Commissioner to such an assignment, transfer, conveyance or other disposition, may result in the revocation and annulment of this Contract. The City shall thereupon be relieved and discharged from any further liability to the Contractor, its assignees, transferees or sublessees, who shall forfeit and lose all monies therefor earned under the Contract, except so much as may be required to pay the Contractor's employees.

18.4 The provisions of this clause shall not hinder, prevent, or affect an assignment by the Contractor for the benefit of its creditors made pursuant to the Laws of the State of New York.

18.5 This Contract may be assigned by the City to any corporation, agency or instrumentality having authority to accept such assignment.

**CHAPTER V
CONTRACTOR'S SECURITY AND GUARANTEE**

ARTICLE 19. SECURITY DEPOSIT

19.1 If performance and payment bonds are required, the City shall retain the bid security to ensure that the successful bidder executes the Contract and furnishes the required payment and performance security within ten (10) Days after notice of the award of the Contract. If the successful bidder fails to execute the Contract and furnish the required payment and performance security, the City shall retain such bid security as set forth in the Information for Bidders. If the successful bidder executes the Contract and furnishes the required payment and performance security, the City shall return the bid security within a reasonable time after the furnishing of such bonds and execution of the Contract by the City.

19.2 If performance and payment bonds are not required, the bid security shall be retained by the City as security for the Contractor's faithful performance of the Contract. If partial payments are provided, the bid security will be returned to the Contractor after the sum retained under Article 21 equals the amount of the bid security, subject to other provisions of this Contract. If partial payments are not provided, the bid security will be released when final payment is certified by the City for payment.

19.3 If the Contractor is declared in default under Article 48 prior to the return of the deposit, or if any claim is made such as referred to in Article 23, the amount of such deposit, or so much thereof as the Comptroller may deem necessary, may be retained and then applied by the Comptroller:

19.3.1 To compensate the City for any expense, loss or damage suffered or incurred by reason of or resulting from such default, including the cost of re-letting and liquidated damages; or

19.3.2 To indemnify the City against any and all claims.

ARTICLE 20. PAYMENT GUARANTEE

20.1 On Contracts where one hundred (100%) percent performance bonds and payment bonds are executed, this Article 20 does not apply.

20.2 In the event the terms of this Contract do not require the Contractor to provide a payment bond or where the Contract does not require a payment bond for one hundred (100%) percent of the Contract price, the City shall, in accordance with the terms of this Article 20, guarantee payment of all lawful claims for:

20.2.1 Wages and compensation for labor performed and/or services rendered; and

20.2.2 Materials, equipment, and supplies provided, whether incorporated into the Work or not, when demands have been filed with the City as provided hereinafter by any person, firm, or corporation which furnished labor, material, equipment, supplies, or any combination thereof, in connection with the Work performed hereunder (hereinafter referred to as the "beneficiary") at the direction of the City or the Contractor.

20.3 The provisions of Article 20.2 are subject to the following limitations and conditions:

20.3.1 If the Contractor provides a payment bond for a value that is less than one hundred (100%) percent of the value of the Contract Work, the payment bond provided by the Contractor shall be primary (and non-contributing) to the payment guarantee provided under this Article 20.

20.3.2 The guarantee is made for the benefit of all beneficiaries as defined in Article 20.2 provided that those beneficiaries strictly adhere to the terms and conditions of Article 20.3.4 and 20.3.5.

20.3.3 Nothing in this Article 20 shall prevent a beneficiary providing labor, services or material for the Work from suing the Contractor for any amounts due and owing the beneficiary by the Contractor.

20.3.4 Every person who has furnished labor or material, to the Contractor or to a Subcontractor of the Contractor, in the prosecution of the Work and who has not been paid in full therefor before the expiration of a period of ninety (90) Days after the date on which the last of the labor was performed or material was furnished by him/her for which the claim is made, shall have the right to sue on this payment guarantee in his/her own name for the amount, or the balance thereof, unpaid at the time of commencement of the action; provided, however, that a person having a direct contractual relationship with a Subcontractor of the Contractor but no contractual relationship express or implied with the Contractor shall not have a right of action upon the guarantee unless he/she shall have given written notice to the Contractor within one hundred twenty (120) Days from the date on which the last of the labor was performed or the last of the material was furnished, for which his/her claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the material was furnished or for whom the labor was performed. The notice shall be served by delivering the same personally to the Contractor or by mailing the same by registered mail, postage prepaid, in an envelope addressed to the Contractor at any place where it maintains an office or conducts its business; provided, however, that where such notice is actually received by the Contractor by other means, such notice shall be deemed sufficient.

20.3.5 Except as provided in Labor Law Section 220-g, no action on this payment guarantee shall be commenced after the expiration of the one-year limitations period set forth in Section 137(4)(b) of the State Finance Law.

20.3.6 The Contractor shall promptly forward to the City any notice or demand received pursuant to Article 20.3.4. The Contractor shall inform the City of any defenses to the notice or demand and shall forward to the City any documents the City requests concerning the notice or demand.

20.3.7 All demands made against the City by a beneficiary of this payment guarantee shall be presented to the Engineer along with all written documentation concerning the demand which the Engineer deems reasonably appropriate or necessary, which may include, but shall not be limited to: the subcontract; any invoices presented to the Contractor for payment; the notarized statement of the beneficiary that the demand is due and payable, that a request for payment has been made of the Contractor and that the demand has not been paid by the Contractor within the time allowed for such payment by the subcontract; and copies of any correspondence between the beneficiary and the Contractor concerning such demand. The City shall notify the Contractor that a demand has been made. The Contractor shall inform the City of any defenses to the demand and shall forward to the City any documents the City requests concerning the demand.

20.3.8 The City shall make payment only if, after considering all defenses presented by the Contractor, it determines that the payment is due and owing to the beneficiary making the demand.

20.3.9 No beneficiary shall be entitled to interest from the City, or to any other costs, including, but not limited to, attorneys' fees, except to the extent required by State Finance Law Section 137.

20.4 Upon the receipt by the City of a demand pursuant to this Article 20, the City may withhold from any payment otherwise due and owing to the Contractor under this Contract an amount sufficient to satisfy the demand.

20.4.1 In the event the City determines that the demand is valid, the City shall notify the Contractor of such determination and the amount thereof and direct the Contractor to immediately pay such amount to the beneficiary. In the event the Contractor, within seven (7) Days of receipt of such notification from the City, fails to pay the beneficiary, such failure shall constitute an automatic and irrevocable assignment of payment by the Contractor to the beneficiary for the amount of the demand determined by the City to be valid. The Contractor, without further notification or other process, hereby gives its unconditional consent to such assignment of payment to the beneficiary and authorizes the City, on its behalf, to take all necessary actions to implement such assignment of payment, including without limitation the execution of any instrument or documentation necessary to effectuate such assignment.

20.4.2 In the event that the amount otherwise due and owing to the Contractor by the City is insufficient to satisfy such demand, the City may, at its option, require payment from the Contractor of an amount sufficient to cover such demand and exercise any other right to require or recover payment which the City may have under Law or Contract.

20.4.3 In the event the City determines that the demand is invalid, any amount withheld pending the City's review of such demand shall be paid to the Contractor; provided, however, no lien has been filed. In the event a claim or an action has been filed, the terms and conditions set forth in Article 23 shall apply. In the event a lien has been filed, the parties will be governed by the provisions of the Lien Law of the State of New York.

20.5 The provisions of this Article 20 shall not prevent the City and the Contractor from resolving disputes in accordance with the PPB Rules, where applicable.

20.6 In the event the City determines that the beneficiary is entitled to payment pursuant to this Article 20, such determination and any defenses and counterclaims raised by the Contractor shall be taken into account in evaluating the Contractor's performance.

20.7 Nothing in this Article 20 shall relieve the Contractor of the obligation to pay the claims of all persons with valid and lawful claims against the Contractor relating to the Work.

20.8 The Contractor shall not require any performance, payment or other bonds of any Subcontractor if this Contract does not require such bonds of the Contractor.

20.9 The payment guarantee made pursuant to this Article 20 shall be construed in a manner consistent with Section 137 of the State Finance Law and shall afford to persons furnishing labor or materials to the Contractor or its Subcontractors in the prosecution of the Work under this Contract all of the rights and remedies afforded to such persons by such section, including but not limited to, the right

to commence an action against the City on the payment guarantee provided by this Article 20 within the one-year limitations period set forth in Section 137(4)(b).

ARTICLE 21. RETAINED PERCENTAGE

21.1 If this Contract requires one hundred (100%) percent performance and payment security, then as further security for the faithful performance of this Contract, the Commissioner shall deduct, and retain until the substantial completion of the Work, five (5%) percent of the value of Work certified for payment in each partial payment voucher.

21.2 If this Contract does not require one hundred (100%) percent performance and payment security and if the price for which this Contract was awarded does not exceed one million (\$1,000,000) dollars, then as further security for the faithful performance of this Contract, the Commissioner shall deduct, and retain until the substantial completion of the Work, five (5%) percent of the value of Work certified for payment in each partial payment voucher.

21.3 If this Contract does not require one hundred (100%) percent performance and payment security and if the price for which this Contract was awarded exceeds one million (\$1,000,000) dollars, then as further security for the faithful performance of this Contract, the Commissioner shall deduct, and retain until the substantial completion of the Work, up to ten (10%) percent of the value of Work certified for payment in each partial payment voucher. The percentage to be retained is set forth in Schedule A of the General Conditions.

ARTICLE 22. INSURANCE

22.1 Types of Insurance: The Contractor shall procure and maintain the following types of insurance if, and as indicated, in Schedule A of the General Conditions (with the minimum limits and special conditions specified in Schedule A): Such insurance shall be maintained from the date the Contractor is required to provide Proof of Insurance pursuant to Article 22.3.1 through the date of completion of all required Work (including punch list work as certified in writing by the Resident Engineer), except for insurance required pursuant to Article 22.1.4, which may terminate upon Substantial Completion of the Contract. All insurance shall meet the requirements set forth in this Article 22. Wherever this Article requires that insurance coverage be "at least as broad" as a specified form (including all ISO forms), there is no obligation that the form itself be used, provided that the Contractor can demonstrate that the alternative form or endorsement contained in its policy provides coverage at least as broad as the specified form.

22.1.1 Commercial General Liability Insurance: The Contractor shall provide Commercial General Liability Insurance covering claims for property damage and/or bodily injury, including death, which may arise from any of the operations under this Contract. Coverage under this insurance shall be at least as broad as that provided by the latest edition of Insurance Services Office ("ISO") Form CG 0001. Such insurance shall be "occurrence" based rather than "claims-made" and include, without limitation, the following types of coverage: premises operations; products and completed operations; contractual liability (including the tort liability of another assumed in a contract); broad form property damage; independent contractors; explosion, collapse and underground (XCU); construction means and methods; and incidental malpractice. Such insurance shall contain a "per project" aggregate limit, as specified in Schedule A, that applies separately to operations under this Contract.

22.1.1(a) Such Commercial General Liability Insurance shall name the City as an Additional Insured. Coverage for the City shall specifically include the City's officials and employees, be at least as broad as the latest edition of ISO Form CG 20 10 and provide completed operations coverage at least as broad as the latest edition of ISO Form CG 20 37.

22.1.1(b) Such Commercial General Liability Insurance shall name all other entities designated as additional insureds in Schedule A but only for claims arising from the Contractor's operations under this Contract, with coverage at least as broad as the latest edition of ISO Form CG 20 26.

22.1.1(c) If the Work requires a permit from the Department of Buildings pursuant to 1 RCNY Section 101-08, at http://www.nyc.gov/html/dob/downloads/rules/1_RCNY_101-08.pdf, the Contractor shall provide Commercial General Liability Insurance with limits of at least those required by 1 RCNY section 101-08. If the Work does not require such a permit, the minimum limits shall be those provided for in Schedule A.

22.1.1(d) If any of the Work includes repair of a waterborne vessel owned by or to be delivered to the City, such Commercial General Liability shall include, or be endorsed to include, Ship Repairer's Legal Liability Coverage to protect against, without limitation, liability arising from navigation of such vessels prior to delivery to and acceptance by the City.

22.1.2 Workers' Compensation Insurance, Employers' Liability Insurance, and Disability Benefits Insurance: The Contractor shall provide, and shall cause its Subcontractors to provide, Workers Compensation Insurance, Employers' Liability Insurance, and Disability Benefits Insurance in accordance with the Laws of the State of New York on behalf of all employees providing services under this Contract (except for those employees, if any, for which the Laws require insurance only pursuant to Article 22.1.3).

22.1.3 United States Longshoremen's and Harbor Workers Act and/or Jones Act Insurance: If specified in Schedule A of the General Conditions or if required by Law, the Contractor shall provide insurance in accordance with the United States Longshoremen's and Harbor Workers Act and/or the Jones Act, on behalf of all qualifying employees providing services under this Contract.

22.1.4 Builders Risk Insurance: If specified in Schedule A of the General Conditions, the Contractor shall provide Builders Risk Insurance on a completed value form for the total value of the Work through Substantial Completion of the Work in its entirety. Such insurance shall be provided on an All Risk basis and include coverage, without limitation, for windstorm (including named windstorm), storm surge, flood and earth movement. Unless waived by the Commissioner, it shall include coverage for ordinance and law, demolition and increased costs of construction, debris removal, pollutant clean up and removal, and expediting costs. Such insurance shall cover, without limitation, (a) all buildings and/or structures involved in the Work, as well as temporary structures at the Site, and (b) any property that is intended to become a permanent part of such building or structure, whether such property is on the Site, in transit or in temporary storage. Policies shall name the Contractor as Named Insured and list the City as both an Additional Insured and a Loss Payee as its interest may appear.

22.1.4(a) Policies of such insurance shall specify that, in the event a loss occurs at an occupied facility, occupancy of such facility is permitted without the consent of the issuing insurance company.

22.1.4(b) Such insurance may be provided through an Installation Floater, at the Contractor's option, if it otherwise conforms with the requirements of this Article 22.1.4.

22.1.5 Commercial Automobile Liability Insurance: The Contractor shall provide Commercial Automobile Liability Insurance for liability arising out of ownership, maintenance or use of any owned (if any), non-owned and hired vehicles to be used in connection with this Contract. Coverage shall be at least as broad as the latest edition of ISO Form CA0001. If vehicles are used for transporting hazardous materials, the Automobile Liability Insurance shall be endorsed to provide pollution liability broadened coverage for covered vehicles (endorsement CA 99 48) as well as proof of MCS 90.

22.1.6 Contractors Pollution Liability Insurance: If specified in Schedule A of the General Conditions, the Contractor shall maintain, or cause the Subcontractor doing such Work to maintain, Contractors Pollution Liability Insurance covering bodily injury and property damage. Such insurance shall provide coverage for actual, alleged or threatened emission, discharge, dispersal, seepage, release or escape of pollutants (including asbestos), including any loss, cost or expense incurred as a result of any cleanup of pollutants (including asbestos) or in the investigation, settlement or defense of any claim, action, or proceedings arising from the operations under this Contract. Such insurance shall be in the Contractor's name and list the City as an Additional Insured and any other entity specified in Schedule A. Coverage shall include, without limitation, (a) loss of use of damaged property or of property that has not been physically injured, (b) transportation, and (c) non-owned disposal sites.

22.1.6(a) Coverage for the City as Additional Insured shall specifically include the City's officials and employees and be at least as broad as provided to the Contractor for this Project.

22.1.6(b) If such insurance is written on a claims-made policy, such policy shall have a retroactive date on or before the effective date of this Contract, and continuous coverage shall be maintained, or an extended discovery period exercised, for a period of not less than three (3) years from the time the Work under this Contract is completed.

22.1.7 Marine Insurance:

22.1.7(a) Marine Protection and Indemnity Insurance: If specified in Schedule A of the General Conditions or if the Contractor engages in marine operations in the execution of any part of the Work, the Contractor shall maintain, or cause the Subcontractor doing such Work to maintain, Marine Protection and Indemnity Insurance with coverage at least as broad as Form SP-23. The insurance shall provide coverage for the Contractor or Subcontractor (whichever is doing this Work) and for the City (together with its officials and employees) and any other entity specified in Schedule A as an Additional Insured for bodily injury and property damage arising from marine operations under this Contract. Coverage shall include, without limitation, injury or death of crew members (if not fully provided through other insurance), removal of wreck, damage to piers, wharves and other fixed or floating objects and loss of or damage to any other vessel or craft, or to property on such other vessel or craft.

22.1.7(b) Hull and Machinery Insurance: If specified in Schedule A of the General Conditions or if the Contractor engages in marine operations in the execution of any part of the Work, the Contractor shall maintain, or cause the Subcontractor doing such Work to maintain, Hull and Machinery Insurance with coverage for the Contractor or Subcontractor (whichever is doing this Work) and for the City (together with its officials and employees) as Additional Insured at least as broad as the latest edition of American Institute Tug Form for all tugs used under this Contract and Collision Liability at least as broad as the latest edition of American Institute Hull Clauses.

22.1.7(c) Marine Pollution Liability Insurance: If specified in Schedule A of the General Conditions or if the Contractor engages in marine operations in the execution of any part of the Work, the Contractor shall maintain, or cause the Subcontractor doing such Work to maintain, Marine Pollution Liability Insurance covering itself (or the Subcontractor doing such Work) as Named Insured and the City (together with its officials and employees) and any other entity specified in Schedule A as an Additional Insured. Coverage shall be at least as broad as that provided by the latest edition of Water Quality Insurance Syndicate Form and include, without limitation, liability arising from the discharge or substantial threat of a discharge of oil, or from the release or threatened release of a hazardous substance including injury to, or economic losses resulting from, the destruction of or damage to real property, personal property or natural resources.

22.1.8 The Contractor shall provide such other types of insurance, at such minimum limits and with such conditions, as are specified in Schedule A of the General Conditions.

22.2 General Requirements for Insurance Coverage and Policies:

22.2.1 All required insurance policies shall be maintained with companies that may lawfully issue the required policy and have an A.M. Best rating of at least A-/VII or a Standard and Poor's rating of at least A, unless prior written approval is obtained from the City Corporation Counsel.

22.2.2 The Contractor shall be solely responsible for the payment of all premiums for all required policies and all deductibles and self-insured retentions to which such policies are subject, whether or not the City is an insured under the policy.

22.2.3 In his/her sole discretion, the Commissioner may, subject to the approval of the Comptroller and the City Corporation Counsel, accept Letters of Credit and/or custodial accounts in lieu of required insurance.

22.2.4 The City's limits of coverage for all types of insurance required pursuant to Schedule A of the General Conditions shall be the greater of (i) the minimum limits set forth in Schedule A or (ii) the limits provided to the Contractor as Named Insured under all primary, excess, and umbrella policies of that type of coverage.

22.2.5 The Contractor may satisfy its insurance obligations under this Article 22 through primary policies or a combination of primary and excess/umbrella policies, so long as all policies provide the scope of coverage required herein.

22.2.6 Policies of insurance provided pursuant to this Article 22 shall be primary and non-contributing to any insurance or self-insurance maintained by the City.

22.3 Proof of Insurance:

22.3.1 For all types of insurance required by Article 22.1 and Schedule A, except for insurance required by Articles 22.1.4 and 22.1.7, the Contractor shall file proof of insurance in accordance with this Article 22.3 within ten (10) Days of award. For insurance provided pursuant to Articles 22.1.4 and 22.1.7, proof shall be filed by a date specified by the Commissioner or ten (10) Days prior to the commencement of the portion of the Work covered by such policy, whichever is earlier.

22.3.2 For Workers' Compensation Insurance provided pursuant to Article 22.1.2, the Contractor shall submit one of the following forms: C-105.2 Certificate of Workers' Compensation Insurance; U-26.3 - State Insurance Fund Certificate of Workers' Compensation Insurance; Request for WC/DB Exemption (Form CE-200); equivalent or successor forms used by the New York State Workers' Compensation Board; or other proof of insurance in a form acceptable to the Commissioner. For Disability Benefits Insurance provided pursuant to Article 22.1.2, the Contractor shall submit DB-120.1 - Certificate Of Insurance Coverage Under The NYS Disability Benefits Law, Request for WC/DB Exemption (Form CE-200); equivalent or successor forms used by the New York State Workers' Compensation Board; or other proof of insurance in a form acceptable to the Commissioner. ACORD forms are not acceptable.

22.3.3 For policies provided pursuant to all of Article 22.1 other than Article 22.1.2, the Contractor shall submit one or more Certificates of Insurance on forms acceptable to the Commissioner. All such Certificates of Insurance shall certify (a) the issuance and effectiveness of such policies of insurance, each with the specified minimum limits (b) for insurance secured pursuant to Article 22.1.1 that the City and any other entity specified in Schedule A is an Additional Insured with coverage at least as broad as the most recent edition of ISO Forms CG 20 10, CG 20 37, and CG 20 26, as applicable; (c) in the event insurance is required pursuant to Article 22.1.6 and/or Article 22.1.7, that the City is an Additional Insured thereunder; (d) the company code issued to the insurance company by the National Association of Insurance Commissioners (the NAIC number); and (e) the number assigned to the Contract by the City. All such Certificates of Insurance shall be accompanied by either a duly executed "Certification by Broker" in the form contained in Part III of Schedule A or copies of all policies referenced in such Certificate of Insurance as certified by an authorized representative of the issuing insurance carrier. If any policy is not available at the time of submission, certified binders may be submitted until such time as the policy is available, at which time a certified copy of the policy shall be submitted.

22.3.4 Documentation confirming renewals of insurance shall be submitted to the Commissioner prior to the expiration date of coverage of policies required under this Contract. Such proofs of insurance shall comply with the requirements of Articles 22.3.2 and 22.3.3.

22.3.5 The Contractor shall be obligated to provide the City with a copy of any policy of insurance provided pursuant to this Article 22 upon the demand for such policy by the Commissioner or the City Corporation Counsel.

22.4 Operations of the Contractor:

22.4.1 The Contractor shall not commence the Work unless and until all required certificates have been submitted to and accepted by the Commissioner. Acceptance by the Commissioner of a certificate does not excuse the Contractor from securing insurance

consistent with all provisions of this Article 22 or of any liability arising from its failure to do so.

22.4.2 The Contractor shall be responsible for providing continuous insurance coverage in the manner, form, and limits required by this Contract and shall be authorized to perform Work only during the effective period of all required coverage.

22.4.3 In the event that any of the required insurance policies lapse, are revoked, suspended or otherwise terminated, for whatever cause, the Contractor shall immediately stop all Work, and shall not recommence Work until authorized in writing to do so by the Commissioner. Upon quitting the Site, except as otherwise directed by the Commissioner, the Contractor shall leave all plant, materials, equipment, tools, and supplies on the Site. Contract time shall continue to run during such periods and no extensions of time will be granted. The Commissioner may also declare the Contractor in default for failure to maintain required insurance.

22.4.4 In the event the Contractor receives notice, from an insurance company or other person, that any insurance policy required under this Article 22 shall be cancelled or terminated (or has been cancelled or terminated) for any reason, the Contractor shall immediately forward a copy of such notice to both the Commissioner and the New York City Comptroller, attn: Office of Contract Administration, Municipal Building, One Centre Street, room 1005, New York, New York 10007. Notwithstanding the foregoing, the Contractor shall ensure that there is no interruption in any of the insurance coverage required under this Article 22.

22.4.5 Where notice of loss, damage, occurrence, accident, claim or suit is required under an insurance policy maintained in accordance with this Article 22, the Contractor shall notify in writing all insurance carriers that issued potentially responsive policies of any such event relating to any operations under this Contract (including notice to Commercial General Liability insurance carriers for events relating to the Contractor's own employees) no later than 20 days after such event. For any policy where the City is an Additional Insured, such notice shall expressly specify that "this notice is being given on behalf of the City of New York as Insured as well as the Named Insured." Such notice shall also contain the following information: the number of the insurance policy, the name of the named insured, the date and location of the damage, occurrence, or accident, and the identity of the persons or things injured, damaged or lost. The Contractor shall simultaneously send a copy of such notice to the City of New York c/o Insurance Claims Specialist, Affirmative Litigation Division, New York City Law Department, 100 Church Street, New York, New York 10007.

22.4.6 In the event of any loss, accident, claim, action, or other event that does or can give rise to a claim under any insurance policy required under this Article 22, the Contractor shall at all times fully cooperate with the City with regard to such potential or actual claim.

22.5 Subcontractor Insurance: In the event the Contractor requires any Subcontractor to procure insurance with regard to any operations under this Contract and requires such Subcontractor to name the Contractor as an Additional Insured thereunder, the Contractor shall ensure that the Subcontractor name the City, including its officials and employees, as an Additional Insured with coverage at least as broad as the most recent edition of ISO Form CG 20 26.

22.6 Wherever reference is made in Article 7 or this Article 22 to documents to be sent to the Commissioner (e.g., notices, filings, or submissions), such documents shall be sent to the address set forth in Schedule A of the General Conditions. In the event no address is set forth in Schedule A, such documents are to be sent to the Commissioner's address as provided elsewhere in this Contract.

22.7 Apart from damages or losses covered by insurance provided pursuant to Articles 22.1.2, 22.1.3, or 22.1.5, the Contractor waives all rights against the City, including its officials and employees, for any damages or losses that are covered under any insurance required under this Article 22 (whether or not such insurance is actually procured or claims are paid thereunder) or any other insurance applicable to the operations of the Contractor and/or its employees, agents, or Subcontractors.

22.8 In the event the Contractor utilizes a self-insurance program to satisfy any of the requirements of this Article 22, the Contractor shall ensure that any such self-insurance program provides the City with all rights that would be provided by traditional insurance under this Article 22, including but not limited to the defense and indemnification obligations that insurers are required to undertake in liability policies.

22.9 Materiality/Non-Waiver: The Contractor's failure to secure policies in complete conformity with this Article 22, or to give an insurance company timely notice of any sort required in this Contract or to do anything else required by this Article 22 shall constitute a material breach of this Contract. Such breach shall not be waived or otherwise excused by any action or inaction by the City at any time.

22.10 Pursuant to General Municipal Law Section 108, this Contract shall be void and of no effect unless Contractor maintains Workers' Compensation Insurance for the term of this Contract to the extent required and in compliance with the New York State Workers' Compensation Law.

22.11 Other Remedies: Insurance coverage provided pursuant to this Article 22 or otherwise shall not relieve the Contractor of any liability under this Contract, nor shall it preclude the City from exercising any rights or taking such other actions available to it under any other provisions of this Contract or Law.

ARTICLE 23. MONEY RETAINED AGAINST CLAIMS

23.1 If any claim shall be made by any person or entity (including Other Contractors with the City on this Project) against the City or against the Contractor and the City for any of the following:

- (a) An alleged loss, damage, injury, theft or vandalism of any of the kinds referred to in Articles 7 and 12, plus the reasonable costs of defending the City, which in the opinion of the Comptroller may not be paid by an insurance company (for any reason whatsoever); or
- (b) An infringement of copyrights, patents or use of patented articles, tools, etc., as referred to in Article 57; or
- (c) Damage claimed to have been caused directly or indirectly by the failure of the Contractor to perform the Work in strict accordance with this Contract,

the amount of such claim, or so much thereof as the Comptroller may deem necessary, may be withheld by the Comptroller, as security against such claim, from any money due hereunder. The Comptroller, in his/her discretion, may permit the Contractor to substitute other satisfactory security in lieu of the monies so withheld.

23.2 If an action on such claim is timely commenced and the liability of the City, or the Contractor, or both, shall have been established therein by a final judgment of a court of competent jurisdiction, or if such claim shall have been admitted by the Contractor to be valid, the Comptroller

shall pay such judgment or admitted claim out of the monies retained by the Comptroller under the provisions of this Article 23, and return the balance, if any, without interest, to the Contractor.

ARTICLE 24. MAINTENANCE AND GUARANTY

24.1 The Contractor shall promptly repair, replace, restore or rebuild, as the Commissioner may determine, any finished Work in which defects of materials or workmanship may appear or to which damage may occur because of such defects, during the one (1) year period subsequent to the date of Substantial Completion (or use and occupancy in accordance with Article 16), except where other periods of maintenance and guaranty are provided for in Schedule A.

24.2 As security for the faithful performance of its obligations hereunder, the Contractor, upon filing its requisition for payment on Substantial Completion, shall deposit with the Commissioner a sum equal to one (1%) percent of the price (or the amount fixed in Schedule A of the General Conditions) in cash or certified check upon a state or national bank and trust company or a check of such bank and trust company signed by a duly authorized officer thereof and drawn to the order of the Comptroller, or obligations of the City, which the Comptroller may approve as of equal value with the sum so required.

24.3 In lieu of the above, the Contractor may make such security payment to the City by authorizing the Commissioner in writing to deduct the amount from the Substantial Completion payment which shall be deemed the deposit required above.

24.4 If the Contractor has faithfully performed all of its obligations hereunder the Commissioner shall so certify to the Comptroller within five (5) Days after the expiration of one (1) year from the date of Substantial Completion and acceptance of the Work or within thirty (30) Days after the expiration of the guarantee period fixed in the Specifications. The security payment shall be repaid to the Contractor without interest within thirty (30) Days after certification by the Commissioner to the Comptroller that the Contractor has faithfully performed all of its obligations hereunder.

24.5 Notice by the Commissioner to the Contractor to repair, replace, rebuild or restore such defective or damaged Work shall be timely, pursuant to this article, if given not later than ten (10) Days subsequent to the expiration of the one (1) year period or other periods provided for herein.

24.6 If the Contractor shall fail to repair, replace, rebuild or restore such defective or damaged Work promptly after receiving such notice, the Commissioner shall have the right to have the Work done by others in the same manner as provided for in the completion of a defaulted Contract, under Article 51.

24.7 If the security payment so deposited is insufficient to cover the cost of such Work, the Contractor shall be liable to pay such deficiency on demand by the Commissioner.

24.8 The Engineer's certificate setting forth the fair and reasonable cost of repairing, replacing, rebuilding or restoring any damaged or defective Work when performed by one other than the Contractor, shall be binding and conclusive upon the Contractor as to the amount thereof.

24.9 The Contractor shall obtain all manufacturers' warranties and guaranties of all equipment and materials required by this Contract in the name of the City and shall deliver same to the Commissioner. All of the City's rights and title and interest in and to said manufacturers' warranties and guaranties may be assigned by the City to any subsequent purchasers of such equipment and materials or lessees of the premises into which the equipment and materials have been installed.

**CHAPTER VI
CHANGES, EXTRA WORK, AND DOCUMENTATION OF CLAIM**

ARTICLE 25. CHANGES

25.1 Changes may be made to this Contract only as duly authorized in writing by the Commissioner in accordance with the Law and this Contract. All such changes, modifications, and amendments will become a part of the Contract. Work so ordered shall be performed by the Contractor.

25.2 Contract changes will be made only for Work necessary to complete the Work included in the original scope of the Contract and/or for non-material changes to the scope of the Contract. Changes are not permitted for any material alteration in the scope of Work in the Contract.

25.3 The Contractor shall be entitled to a price adjustment for Extra Work performed pursuant to a written change order. Adjustments to price shall be computed in one or more of the following ways:

25.3.1 By applicable unit prices specified in the Contract; and/or

25.3.2 By agreement of a fixed price; and/or

25.3.3 By time and material records; and/or

25.3.4 In any other manner approved by the CCPO.

25.4 All payments for change orders are subject to pre-audit by the Engineering Audit Officer and may be post-audited by the Comptroller and/or the Agency.

ARTICLE 26. METHODS OF PAYMENT FOR OVERRUNS AND EXTRA WORK

26.1 **Overrun of Unit Price Item:** An overrun is any quantity of a unit price item which the Contractor is directed to provide which is in excess of one hundred twenty-five (125%) percent of the estimated quantity for that item set forth in the bid schedule.

26.1.1 For any unit price item, the Contractor will be paid at the unit price bid for any quantity up to one hundred twenty-five (125%) percent of the estimated quantity for that item set forth in the bid schedule. If during the progress of the Work, the actual quantity of any unit price item required to complete the Work approaches the estimated quantity for that item, and for any reason it appears that the actual quantity of any unit price item necessary to complete the Work will exceed the estimated quantity for that item by twenty-five (25%) percent, the Contractor shall immediately notify the Engineer of such anticipated overrun. The Contractor shall not be compensated for any quantity of a unit price item provided which is in excess of one hundred twenty-five (125%) percent of the estimated quantity for that item set forth in the bid schedule without written authorization from the Engineer.

26.1.2 If the actual quantity of any unit price item necessary to complete the Work will exceed one hundred twenty five (125%) percent of the estimated quantity for that item set forth in the bid schedule, the City reserves the right and the Contractor agrees to negotiate a new unit price for such item. In no event shall such negotiated new unit price exceed the unit bid price. If the City and Contractor cannot agree on a new unit price, then the City shall order the Contractor and the Contractor agrees to provide additional quantities of the

item on the basis of time and material records for the actual and reasonable cost as determined under Article 26.2, but in no event at a unit price exceeding the unit price bid.

26.2 **Extra Work:** For Extra Work where payment is by agreement on a fixed price in accordance with Article 25.3.2, the price to be paid for such Extra Work shall be based on the fair and reasonable estimated cost of the items set forth below. For Extra Work where payment is based on time and material records in accordance with Article 25.3.3, the price to be paid for such Extra Work shall be the actual and reasonable cost of the items set forth below, calculated in accordance with the formula specified therein, if any.

26.2.1 Necessary materials (including transportation to the Site); plus

26.2.2 Necessary direct labor, including payroll taxes (subject to statutory wage caps) and supplemental benefits; plus

26.2.3 Sales and personal property taxes, if any, required to be paid on materials not incorporated into such Extra Work; plus

26.2.4 Reasonable rental value of Contractor-owned (or Subcontractor-owned, as applicable), necessary plant and equipment other than Small Tools, plus fuel/energy costs. Except for fuel costs for pick-up trucks which shall be reimbursed based on a consumption of five (5) gallons per shift, fuel costs shall be reimbursed based on actual costs or, in the absence of auditable documentation, the following fuel consumption formula per operating hour: $(.035) \times (\text{HP rating}) \times (\text{Fuel cost/gallon})$. Reasonable rental value is defined as the lower of either seventy-five percent of the monthly prorated rental rates established in "The AED Green Book, Rental Rates and Specifications for Construction Equipment" published by Equipment Watch (the "Green Book"), or seventy-five percent of the monthly prorated rental rates established in the "Rental Rate Blue Book for Construction Equipment" published by Equipment Watch (the "Blue Book") (the applicable Blue Book rate being for rental only without the addition of any operational costs listed in the Blue Book). The reasonable rental value is deemed to be inclusive of all operating costs except for fuel/energy consumption and equipment operator's wages/costs. For multiple shift utilization, reimbursement shall be calculated as follows: first shift shall be seventy-five (75%) percent of such rental rates; second shift shall be sixty (60%) percent of the first shift rate; and third shift shall be forty (40%) percent of the first shift rate. Equipment on standby shall be reimbursed at one-third (1/3) the prorated monthly rental rate. Contractor-owned (or Subcontractor-owned, as applicable) equipment includes equipment from rental companies affiliated with or controlled by the Contractor (or Subcontractor, as applicable), as determined by the Commissioner. In establishing cost reimbursement for non-operating Contractor-owned (or Subcontractor-owned, as applicable) equipment (scaffolding, sheeting systems, road plates, etc.), the City may restrict reimbursement to a purchase-salvage/life cycle basis if less than the computed rental costs; plus

26.2.5 Necessary installation and dismantling of such plant and equipment, including transportation to and from the Site, if any, provided that, in the case of non-Contractor-owned (or non-Subcontractor-owned, as applicable) equipment rented from a third party, the cost of installation and dismantling are not allowable if such costs are included in the rental rate; plus

26.2.6 Necessary fees charged by governmental entities; plus

26.2.7 Necessary construction-related service fees charged by non-governmental entities, such as landfill tipping fees; plus

26.2.8 Reasonable rental costs of non-Contractor-owned (or non-Subcontractor-owned, as applicable) necessary plant and equipment other than Small Tools, plus fuel/energy costs. Except for fuel costs for pick-up trucks which shall be reimbursed based on a consumption of five (5) gallons per shift, fuel costs shall be reimbursed based on actual costs or, in the absence of auditable documentation, the following fuel consumption formula per hour of operation: $(.035) \times (\text{HP rating}) \times (\text{Fuel cost/gallon})$. In lieu of renting, the City reserves the right to direct the purchase of non-operating equipment (scaffolding, sheeting systems, road plates, etc.), with payment on a purchase-salvage/life cycle basis, if less than the projected rental costs; plus

26.2.9 Workers' Compensation Insurance, and any insurance coverage expressly required by the City for the performance of the Extra Work which is different than the types of insurance required by Article 22 and Schedule A of the General Conditions. The cost of Workers' Compensation Insurance is subject to applicable payroll limitation caps and shall be based upon the carrier's Manual Rate for such insurance derived from the applicable class Loss Cost ("LC") and carrier's Lost Cost Multiplier ("LCM") approved by the New York State Department of Financial Services, and with the exception of experience rating, rate modifiers as promulgated by the New York Compensation Insurance Rating Board ("NYCIRB"); plus

26.2.10 Additional costs incurred as a result of the Extra Work for performance and payment bonds; plus

26.2.11 Twelve percent (12%) percent of the total of items in Articles 26.2.1 through 26.2.5 as compensation for overhead, except that no percentage for overhead will be allowed on Payroll Taxes or on the premium portion of overtime pay or on sales and personal property taxes. Overhead shall include without limitation, all costs and expenses in connection with administration, management superintendence, small tools, and insurance required by Schedule A of the General Conditions other than Workers' Compensation Insurance; plus

26.2.12 Ten (10%) percent of the total of items in Articles 26.2.1 through 26.2.5, plus the items in Article 26.2.11, as compensation for profit, except that no percentage for profit will be allowed on Payroll Taxes or on the premium portion of overtime pay or on sales and personal property taxes; plus

26.2.13 Five (5%) percent of the total of items in Articles 26.2.6 through 26.2.10 as compensation for overhead and profit.

26.3 Where the Extra Work is performed in whole or in part by other than the Contractor's own forces pursuant to Article 26.2, the Contractor shall be paid, subject to pre-audit by the Engineering Audit Officer, the cost of such Work computed in accordance with Article 26.2 above, plus an additional allowance of five (5%) percent to cover the Contractor's overhead and profit.

26.4 Where a change is ordered, involving both Extra Work and omitted or reduced Contract Work, the Contract price shall be adjusted, subject to pre-audit by the EAO, in an amount based on the difference between the cost of such Extra Work and of the omitted or reduced Work.

26.5 Where the Contractor and the Commissioner can agree upon a fixed price for Extra Work in accordance with Article 25.3.2 or another method of payment for Extra Work in accordance with Article

25.3.4, or for Extra Work ordered in connection with omitted Work, such method, subject to pre-audit by the EAO, may, at the option of the Commissioner, be substituted for the cost plus a percentage method provided in Article 26.2; provided, however, that if the Extra Work is performed by a Subcontractor, the Contractor shall not be entitled to receive more than an additional allowance of five (5%) percent for overhead and profit over the cost of such Subcontractor's Work as computed in accordance with Article 26.2.

ARTICLE 27. RESOLUTION OF DISPUTES

27.1 All disputes between the City and the Contractor of the kind delineated in this Article 27.1 that arise under, or by virtue of, this Contract shall be finally resolved in accordance with the provisions of this Article 27 and the PPB Rules. This procedure for resolving all disputes of the kind delineated herein shall be the exclusive means of resolving any such disputes.

27.1.1 This Article 27 shall not apply to disputes concerning matters dealt with in other sections of the PPB Rules, or to disputes involving patents, copyrights, trademarks, or trade secrets (as interpreted by the courts of New York State) relating to proprietary rights in computer software.

27.1.2 This Article 27 shall apply only to disputes about the scope of Work delineated by the Contract, the interpretation of Contract documents, the amount to be paid for Extra Work or disputed work performed in connection with the Contract, the conformity of the Contractor's Work to the Contract, and the acceptability and quality of the Contractor's Work; such disputes arise when the Engineer, Resident Engineer, Engineering Audit Officer, or other designee of the Commissioner makes a determination with which the Contractor disagrees.

27.2 All determinations required by this Article 27 shall be made in writing clearly stated, with a reasoned explanation for the determination based on the information and evidence presented to the party making the determination. Failure to make such determination within the time required by this Article 27 shall be deemed a non-determination without prejudice that will allow application to the next level.

27.3 During such time as any dispute is being presented, heard, and considered pursuant to this Article 27, the Contract terms shall remain in force and the Contractor shall continue to perform Work as directed by the ACCO or the Engineer. Failure of the Contractor to continue Work as directed shall constitute a waiver by the Contractor of its claim.

27.4 Presentation of Disputes to Commissioner.

Notice of Dispute and Agency Response. The Contractor shall present its dispute in writing ("Notice of Dispute") to the Commissioner within thirty (30) Days of receiving written notice of the determination or action that is the subject of the dispute. This notice requirement shall not be read to replace any other notice requirements contained in the Contract. The Notice of Dispute shall include all the facts, evidence, documents, or other basis upon which the Contractor relies in support of its position, as well as a detailed computation demonstrating how any amount of money claimed by the Contractor in the dispute was arrived at. Within thirty (30) Days after receipt of the detailed written submission comprising the complete Notice of Dispute, the Engineer, Resident Engineer, Engineering Audit Officer, or other designee of the Commissioner shall submit to the Commissioner all materials he or she deems pertinent to the dispute. Following initial submissions to the Commissioner, either party may demand of the other the production of any document or other material the demanding party believes may be relevant to the dispute. The requested party shall produce all relevant materials that are not otherwise

protected by a legal privilege recognized by the courts of New York State. Any question of relevancy shall be determined by the Commissioner whose decision shall be final. Willful failure of the Contractor to produce any requested material whose relevancy the Contractor has not disputed, or whose relevancy has been affirmatively determined, shall constitute a waiver by the Contractor of its claim.

27.4.1 Commissioner Inquiry. The Commissioner shall examine the material and may, in his or her discretion, convene an informal conference with the Contractor, the ACCO, and the Engineer, Resident Engineer, Engineering Audit Officer, or other designee of the Commissioner to resolve the issue by mutual consent prior to reaching a determination. The Commissioner may seek such technical or other expertise as he or she shall deem appropriate, including the use of neutral mediators, and require any such additional material from either or both parties as he or she deems fit. The Commissioner's ability to render, and the effect of, a decision hereunder shall not be impaired by any negotiations in connection with the dispute presented, whether or not the Commissioner participated therein. The Commissioner may or, at the request of any party to the dispute, shall compel the participation of any Other Contractor with a contract related to the Work of this Contract, and that Contractor shall be bound by the decision of the Commissioner. Any Other Contractor thus brought into the dispute resolution proceeding shall have the same rights and obligations under this Article 27 as the Contractor initiating the dispute.

27.4.2 Commissioner Determination. Within thirty (30) Days after the receipt of all materials and information, or such longer time as may be agreed to by the parties, the Commissioner shall make his or her determination and shall deliver or send a copy of such determination to the Contractor, the ACCO, and Engineer, Resident Engineer, Engineering Audit Officer, or other designee of the Commissioner, as applicable, together with a statement concerning how the decision may be appealed.

27.4.3 Finality of Commissioner's Decision. The Commissioner's decision shall be final and binding on all parties, unless presented to the Contract Dispute Resolution Board pursuant to this Article 27. The City may not take a petition to the Contract Dispute Resolution Board. However, should the Contractor take such a petition, the City may seek, and the Contract Dispute Resolution Board may render, a determination less favorable to the Contractor and more favorable to the City than the decision of the Commissioner.

27.5 Presentation of Dispute to the Comptroller. Before any dispute may be brought by the Contractor to the Contract Dispute Resolution Board, the Contractor must first present its claim to the Comptroller for his or her review, investigation, and possible adjustment.

27.5.1 Time, Form, and Content of Notice. Within thirty (30) Days of its receipt of a decision by the Commissioner, the Contractor shall submit to the Comptroller and to the Commissioner a Notice of Claim regarding its dispute with the Agency. The Notice of Claim shall consist of (i) a brief written statement of the substance of the dispute, the amount of money, if any, claimed and the reason(s) the Contractor contends the dispute was wrongly decided by the Commissioner; (ii) a copy of the written decision of the Commissioner; and (iii) a copy of all materials submitted by the Contractor to the Agency, including the Notice of Dispute. The Contractor may not present to the Comptroller any material not presented to the Commissioner, except at the request of the Comptroller.

27.5.2 Response. Within thirty (30) Days of receipt of the Notice of Claim, the Agency shall make available to the Comptroller a copy of all material submitted by the Agency to the Commissioner in connection with the dispute. The Agency may not present to the

Comptroller any material not presented to the Commissioner except at the request of the Comptroller.

27.5.3 Comptroller Investigation. The Comptroller may investigate the claim in dispute and, in the course of such investigation, may exercise all powers provided in Sections 7-201 and 7-203 of the Administrative Code. In addition, the Comptroller may demand of either party, and such party shall provide, whatever additional material the Comptroller deems pertinent to the claim, including original business records of the Contractor. Willful failure of the Contractor to produce within fifteen (15) Days any material requested by the Comptroller shall constitute a waiver by the Contractor of its claim. The Comptroller may also schedule an informal conference to be attended by the Contractor, Agency representatives, and any other personnel desired by the Comptroller.

27.5.4 Opportunity of Comptroller to Compromise or Adjust Claim. The Comptroller shall have forty-five (45) Days from his or her receipt of all materials referred to in Article 27.5.3 to investigate the disputed claim. The period for investigation and compromise may be further extended by agreement between the Contractor and the Comptroller, to a maximum of ninety (90) Days from the Comptroller's receipt of all materials. The Contractor may not present its petition to the Contract Dispute Resolution Board until the period for investigation and compromise delineated in this Article 27.5.4 has expired. In compromising or adjusting any claim hereunder, the Comptroller may not revise or disregard the terms of the Contract between the parties.

27.6 Contract Dispute Resolution Board. There shall be a Contract Dispute Resolution Board composed of:

27.6.1 The chief administrative law judge of the Office of Administrative Trials and Hearings (OATH) or his/her designated OATH administrative law judge, who shall act as chairperson, and may adopt operational procedures and issue such orders consistent with this Article 27 as may be necessary in the execution of the Contract Dispute Resolution Board's functions, including, but not limited to, granting extensions of time to present or respond to submissions;

27.6.2 The CCPO or his/her designee; any designee shall have the requisite background to consider and resolve the merits of the dispute and shall not have participated personally and substantially in the particular matter that is the subject of the dispute or report to anyone who so participated; and

27.6.3 A person with appropriate expertise who is not an employee of the City. This person shall be selected by the presiding administrative law judge from a prequalified panel of individuals, established and administered by OATH with appropriate background to act as decision-makers in a dispute. Such individual may not have a contract or dispute with the City or be an officer or employee of any company or organization that does, or regularly represents persons, companies, or organizations having disputes with the City.

27.7 Petition to the Contract Dispute Resolution Board. In the event the claim has not been settled or adjusted by the Comptroller within the period provided in this Article 27, the Contractor, within thirty (30) Days thereafter, may petition the Contract Dispute Resolution Board to review the Commissioner's determination.

27.7.1 Form and Content of Petition by Contractor. The Contractor shall present its dispute to the Contract Dispute Resolution Board in the form of a petition, which shall

include (i) a brief written statement of the substance of the dispute, the amount of money, if any, claimed, and the reason(s) the Contractor contends the dispute was wrongly decided by the Commissioner; (ii) a copy of the written Decision of the Commissioner, (iii) copies of all materials submitted by the Contractor to the Agency; (iv) a copy of the written decision of the Comptroller, if any, and (v) copies of all correspondence with, or written material submitted by the Contractor, to the Comptroller. The Contractor shall concurrently submit four (4) complete sets of the Petition: one set to the City Corporation Counsel (Attn: Commercial and Real Estate Litigation Division) and three (3) sets to the Contract Dispute Resolution Board at OATH's offices with proof of service on the City Corporation Counsel. In addition, the Contractor shall submit a copy of the written statement of the substance of the dispute, cited in (i) above, to both the Commissioner and the Comptroller.

27.7.2 Agency Response. Within thirty (30) Days of its receipt of the Petition by the City Corporation Counsel, the Agency shall respond to the brief written statement of the Contractor and make available to the Contract Dispute Resolution Board all material it submitted to the Commissioner and Comptroller. Three (3) complete copies of the Agency response shall be provided to the Contract Dispute Resolution Board and one to the Contractor. Extensions of time for submittal of the Agency response shall be given as necessary upon a showing of good cause or, upon consent of the parties, for an initial period of up to thirty (30) Days.

27.7.3 Further Proceedings. The Contract Dispute Resolution Board shall permit the Contractor to present its case by submission of memoranda, briefs, and oral argument. The Contract Dispute Resolution Board shall also permit the Agency to present its case in response to the Contractor by submission of memoranda, briefs, and oral argument. If requested by the City Corporation Counsel, the Comptroller shall provide reasonable assistance in the preparation of the Agency's case. Neither the Contractor nor the Agency may support its case with any documentation or other material that was not considered by the Comptroller, unless requested by the Contract Dispute Resolution Board. The Contract Dispute Resolution Board, in its discretion, may seek such technical or other expert advice as it shall deem appropriate and may seek, on its own or upon application of a party, any such additional material from any party as it deems fit. The Contract Dispute Resolution Board, in its discretion, may combine more than one dispute between the parties for concurrent resolution.

27.7.4 Contract Dispute Resolution Board Determination. Within forty-five (45) Days of the conclusion of all written submissions and oral arguments, the Contract Dispute Resolution Board shall render a written decision resolving the dispute. In an unusually complex case, the Contract Dispute Resolution Board may render its decision in a longer period, not to exceed ninety (90) Days, and shall so advise the parties at the commencement of this period. The Contract Dispute Resolution Board's decision must be consistent with the terms of the Contract. Decisions of the Contract Dispute Resolution Board shall only resolve matters before the Contract Dispute Resolution Board and shall not have precedential effect with respect to matters not before the Contract Dispute Resolution Board.

27.7.5 Notification of Contract Dispute Resolution Board Decision. The Contract Dispute Resolution Board shall send a copy of its decision to the Contractor, the ACCO, the Engineer, the Comptroller, the City Corporation Counsel, the CCPO, and the PPB. A decision in favor of the Contractor shall be subject to the prompt payment provisions of the PPB Rules. The Required Payment Date shall be thirty (30) Days after the date the parties are formally notified of the Contract Dispute Resolution Board's decision.

27.7.6 Finality of Contract Dispute Resolution Board Decision. The Contract Dispute Resolution

Board's decision shall be final and binding on all parties. Any party may seek review of the Contract Dispute Resolution Board's decision solely in the form of a challenge, filed within four (4) months of the date of the Contract Dispute Resolution Board's decision, in a court of competent jurisdiction of the State of New York, County of New York pursuant to Article 78 of the Civil Practice Law and Rules. Such review by the court shall be limited to the question of whether or not the Contract Dispute Resolution Board's decision was made in violation of lawful procedure, was affected by an error of Law, or was arbitrary and capricious or an abuse of discretion. No evidence or information shall be introduced or relied upon in such proceeding that was not presented to the Contract Dispute Resolution Board in accordance with this Article 27.

27.8 Any termination, cancellation, or alleged breach of the Contract prior to or during the pendency of any proceedings pursuant to this Article 27 shall not affect or impair the ability of the Commissioner or Contract Dispute Resolution Board to make a binding and final decision pursuant to this Article 27.

ARTICLE 28. RECORD KEEPING FOR EXTRA OR DISPUTED WORK OR WORK ON A TIME & MATERIALS BASIS

28.1 While the Contractor or any of its Subcontractors is performing Work on a time and material basis or Extra Work on a time and material basis ordered by the Commissioner under Article 25, or where the Contractor believes that it or any of its Subcontractors is performing Extra Work but a final determination by Agency has not been made, or the Contractor or any of its Subcontractors is performing disputed Work (whether on or off the Site), or complying with a determination or order under protest in accordance with Articles 11, 27, and 30, in each such case the Contractor shall furnish the Resident Engineer daily with three (3) copies of written statements signed by the Contractor's representative at the Site showing:

28.1.1 The name, trade, and number of each worker employed on such Work or engaged in complying with such determination or order, the number of hours employed, and the character of the Work each is doing; and

28.1.2 The nature and quantity of any materials, plant and equipment furnished or used in connection with the performance of such Work or compliance with such determination or order, and from whom purchased or rented.

28.2 A copy of such statement will be countersigned by the Resident Engineer, noting thereon any items not agreed to or questioned, and will be returned to the Contractor within two (2) Days after submission.

28.3 The Contractor and its Subcontractors, when required by the Commissioner, or the Comptroller, shall also produce for inspection, at the office of the Contractor or Subcontractor, any and all of its books, bid documents, financial statements, vouchers, records, daily job diaries and reports, and cancelled checks, and any other documents relating to showing the nature and quantity of the labor, materials, plant and equipment actually used in the performance of such Work, or in complying with such determination or order, and the amounts expended therefor, and shall permit the Commissioner and the Comptroller to make such extracts therefrom, or copies thereof, as they or either of them may desire.

28.4 In connection with the examination provided for herein, the Commissioner, upon demand therefor, will produce for inspection by the Contractor such records as the Agency may have with

respect to such Extra Work or disputed Work performed under protest pursuant to order of the Commissioner, except those records and reports which may have been prepared for the purpose of determining the accuracy and validity of the Contractor's claim.

28.5 Failure to comply strictly with these requirements shall constitute a waiver of any claim for extra compensation or damages on account of the performance of such Work or compliance with such determination or order.

ARTICLE 29. OMITTED WORK

29.1 If any Contract Work in a lump sum Contract, or if any part of a lump sum item in a unit price, lump sum, or percentage-bid Contract is omitted by the Commissioner pursuant to Article 33, the Contract price, subject to audit by the EAO, shall be reduced by a pro rata portion of the lump sum bid amount based upon the percent of Work omitted subject to Article 29.4. For the purpose of determining the pro rata portion of the lump sum bid amount, the bid breakdown submitted in accordance with Article 41 shall be considered, but shall not be the determining factor.

29.2 If the whole of a lump sum item or units of any other item is so omitted by the Commissioner in a unit price, lump sum, or percentage-bid Contract, then no payment will be made therefor except as provided in Article 29.4.

29.3 For units that have been ordered but are only partially completed, the unit price shall be reduced by a pro rata portion of the unit price bid based upon the percentage of Work omitted subject to Article 29.4.

29.4 In the event the Contractor, with respect to any omitted Work, has purchased any non-cancelable material and/or equipment that is not capable of use except in the performance of this Contract and has been specifically fabricated for the sole purpose of this Contract, but not yet incorporated into the Work, the Contractor shall be paid for such material and/or equipment in accordance with Article 64.2.1(b); provided, however, such payment is contingent upon the Contractor's delivery of such material and/or equipment in acceptable condition to a location designated by the City.

29.5 The Contractor agrees to make no claim for damages or for loss of overhead and profit with regard to any omitted Work.

ARTICLE 30. NOTICE AND DOCUMENTATION OF COSTS AND DAMAGES; PRODUCTION OF FINANCIAL RECORDS

30.1 If the Contractor shall claim to be sustaining damages by reason of any act or omission of the City or its agents, it shall submit to the Commissioner within forty-five (45) Days from the time such damages are first incurred, and every thirty (30) Days thereafter for as long as such damages are incurred, verified statements of the details and the amounts of such damages, together with documentary evidence of such damages. The Contractor may submit any of the above statements within such additional time as may be granted by the Commissioner in writing upon written request therefor. Failure of the Commissioner to respond in writing to a written request for additional time within thirty (30) Days shall be deemed a denial of the request. On failure of the Contractor to strictly comply with the foregoing provisions, such claims shall be deemed waived and no right to recover on such claims shall exist. Damages that the Contractor may claim in any action or dispute resolution procedure arising under or by reason of this Contract shall not be different from or in excess of the statements and documentation made pursuant to this Article 30.

30.2 In addition to the foregoing statements, the Contractor shall, upon notice from the Commissioner, produce for examination at the Contractor's office, by the Engineer, Architect or Project Manager, all of its books of account, bills, invoices, payrolls, subcontracts, time books, daily reports, bank deposit books, bank statements, check books, and cancelled checks, showing all of its acts and transactions in connection with or relating to or arising by reason of this Contract, and submit itself and persons in its employment, for examination under oath by any person designated by the Commissioner or Comptroller to investigate claims made or disputes against the City under this Contract. At such examination, a duly authorized representative of the Contractor may be present.

30.3 In addition to the statements required under Article 28 and this Article 30, the Contractor and/or its Subcontractor shall, within thirty (30) Days upon notice from the Commissioner or Comptroller, produce for examination at the Contractor's and/or Subcontractor's office, by a representative of either the Commissioner or Comptroller, all of its books of account, bid documents, financial statements, accountant workpapers, bills, invoices, payrolls, subcontracts, time books, daily reports, bank deposit books, bank statements, check books, and cancelled checks, showing all of its acts and transactions in connection with or relating to or arising by reason of this Contract. Further, the Contractor and/or its Subcontractor shall submit any person in its employment, for examination under oath by any person designated by the Commissioner or Comptroller to investigate claims made or disputes against the City under this Contract. At such examination, a duly authorized representative of the Contractor may be present.

30.4 Unless the information and examination required under Article 30.3 is provided by the Contractor and/or its Subcontractor upon thirty (30) Days' notice from the Commissioner or Comptroller, or upon the Commissioner's or Comptroller's written authorization to extend the time to comply, the City shall be released from all claims arising under, relating to or by reason of this Contract, except for sums certified by the Commissioner to be due under the provisions of this Contract. It is further stipulated and agreed that no person has the power to waive any of the foregoing provisions and that in any action or dispute resolution procedure against the City to recover any sum in excess of the sums certified by the Commissioner to be due under or by reason of this Contract, the Contractor must allege in its complaint and prove, at trial or during such dispute resolution procedure, compliance with the provisions of this Article 30.

30.5 In addition, after the commencement of any action or dispute resolution procedure by the Contractor arising under or by reason of this Contract, the City shall have the right to require the Contractor to produce for examination under oath, up until the trial of the action or hearing before the Contract Dispute Resolution Board, the books and documents described in Article 30.3 and submit itself and all persons in its employ for examination under oath. If this Article 30 is not complied with as required, then the Contractor hereby consents to the dismissal of the action or dispute resolution procedure.

**CHAPTER VII
POWERS OF THE RESIDENT ENGINEER,
THE ENGINEER OR ARCHITECT AND THE COMMISSIONER**

ARTICLE 31. THE RESIDENT ENGINEER

31.1 The Resident Engineer shall have the power to inspect, supervise, and control the performance of the Work, subject to review by the Commissioner. The Resident Engineer shall not, however, have the power to issue an Extra Work order, except as specifically designated in writing by the Commissioner.

ARTICLE 32. THE ENGINEER OR ARCHITECT OR PROJECT MANAGER

32.1 The Engineer or Architect or Project Manager, in addition to those matters elsewhere herein delegated to the Engineer and expressly made subject to his/her determination, direction or approval, shall have the power, subject to review by the Commissioner:

32.1.1 To determine the amount, quality, and location of the Work to be paid for hereunder; and

32.1.2 To determine all questions in relation to the Work, to interpret the Contract Drawings, Specifications, and Addenda, and to resolve all patent inconsistencies or ambiguities therein; and

32.1.3 To determine how the Work of this Contract shall be coordinated with Work of Other Contractors engaged simultaneously on this Project, including the power to suspend any part of the Work, but not the whole thereof; and

32.1.4 To make minor changes in the Work as he/she deems necessary, provided such changes do not result in a net change in the cost to the City or to the Contractor of the Work to be done under the Contract; and

32.1.5 To amplify the Contract Drawings, add explanatory information and furnish additional Specifications and drawings, consistent with this Contract.

32.2 The foregoing enumeration shall not imply any limitation upon the power of the Engineer or Architect or Project Manager, for it is the intent of this Contract that all of the Work shall generally be subject to his/her determination, direction, and approval, except where the determination, direction or approval of someone other than the Engineer or Architect or Project Manager is expressly called for herein.

32.3 The Engineer or Architect or Project Manager shall not, however, have the power to issue an Extra Work order, except as specifically designated in writing by the Commissioner.

ARTICLE 33. THE COMMISSIONER

33.1 The Commissioner, in addition to those matters elsewhere herein expressly made subject to his/her determination, direction or approval, shall have the power:

33.1.1 To review and make determinations on any and all questions in relation to this Contract and its performance; and

33.1.2 To modify or change this Contract so as to require the performance of Extra Work (subject, however, to the limitations specified in Article 25) or the omission of Contract Work; and

33.1.3 To suspend the whole or any part of the Work whenever in his/her judgment such suspension is required:

33.1.3(a) In the interest of the City generally; or

33.1.3(b) To coordinate the Work of the various contractors engaged on this Project pursuant to the provisions of Article 12; or

33.1.3(c) To expedite the completion of the entire Project even though the completion of this particular Contract may thereby be delayed.

ARTICLE 34. NO ESTOPPEL

34.1 Neither the City nor any Agency, official, agent or employee thereof, shall be bound, precluded or estopped by any determination, decision, approval, order, letter, payment or certificate made or given under or in connection with this Contract by the City, the Commissioner, the Engineer, the Resident Engineer, or any other official, agent or employee of the City, either before or after the final completion and acceptance of the Work and payment therefor:

34.1.1 From showing the true and correct classification, amount, quality or character of the Work actually done; or that any such determination, decision, order, letter, payment or certificate was untrue, incorrect or improperly made in any particular, or that the Work, or any part thereof, does not in fact conform to the requirements of this Contract; and

34.1.2 From demanding and recovering from the Contractor any overpayment made to it, or such damages as the City may sustain by reason of the Contractor's failure to perform each and every part of its Contract.

CHAPTER VIII LABOR PROVISIONS

ARTICLE 35. EMPLOYEES

35.1 The Contractor and its Subcontractors shall not employ on the Work:

35.1.1 Anyone who is not competent, faithful and skilled in the Work for which he/she shall be employed; and whenever the Commissioner shall inform the Contractor, in writing, that any employee is, in his/her opinion, incompetent, unfaithful or disobedient, that employee shall be discharged from the Work forthwith, and shall not again be employed upon it; or

35.1.2 Any labor, materials or means whose employment, or utilization during the course of this Contract, may tend to or in any way cause or result in strikes, work stoppages, delays, suspension of Work or similar troubles by workers employed by the Contractor or its Subcontractors, or by any of the trades working in or about the buildings and premises where Work is being performed under this Contract, or by Other Contractors or their Subcontractors pursuant to other contracts, or on any other building or premises owned or operated by the City, its Agencies, departments, boards or authorities. Any violation by the Contractor of this requirement may, upon certification of the Commissioner, be considered as proper and sufficient cause for declaring the Contractor to be in default, and for the City to take action against it as set forth in Chapter X of this Contract, or such other article of this Contract as the Commissioner may deem proper; or

35.1.3 In accordance with Section 220.3-e of the Labor Law of the State of New York (hereinafter "Labor Law"), the Contractor and its Subcontractors shall not employ on the Work any apprentice, unless he/she is a registered individual, under a bona fide program

registered with the New York State Department of Labor. The allowable ratio of apprentices to journey-level workers in any craft classification shall not be greater than the ratio permitted to the Contractor as to its work force on any job under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered as above, shall be paid the wage rate determined by the Comptroller of the City for the classification of Work actually performed. The Contractor or Subcontractor will be required to furnish written evidence of the registration of its program and apprentices as well as all the appropriate ratios and wage rates, for the area of the construction prior to using any apprentices on the Contract Work.

35.2 If the total cost of the Work under this Contract is at least two hundred fifty thousand (\$250,000) dollars, all laborers, workers, and mechanics employed in the performance of the Contract on the public work site, either by the Contractor, Subcontractor or other person doing or contracting to do the whole or a part of the Work contemplated by the Contract, shall be certified prior to performing any Work as having successfully completed a course in construction safety and health approved by the United States Department of Labor's Occupational Safety and Health Administration that is at least ten (10) hours in duration.

35.3 In accordance with Local Law Nos. 30-2012 and 33-2012, codified at sections 6-132 and 12-113 of the Administrative Code, respectively,

35.3.1 The Contractor shall not take an adverse personnel action with respect to an officer or employee in retaliation for such officer or employee making a report of information concerning conduct which such officer or employee knows or reasonably believes to involve corruption, criminal activity, conflict of interest, gross mismanagement or abuse of authority by any officer or employee relating to this Contract to (a) the Commissioner of the Department of Investigation, (b) a member of the New York City Council, the Public Advocate, or the Comptroller, or (c) the CCPO, ACCO, Agency head, or Commissioner.

35.3.2 If any of the Contractor's officers or employees believes that he or she has been the subject of an adverse personnel action in violation of Article 35.3.1, he or she shall be entitled to bring a cause of action against the Contractor to recover all relief necessary to make him or her whole. Such relief may include but is not limited to: (a) an injunction to restrain continued retaliation, (b) reinstatement to the position such employee would have had but for the retaliation or to an equivalent position, (c) reinstatement of full fringe benefits and seniority rights, (d) payment of two times back pay, plus interest, and (e) compensation for any special damages sustained as a result of the retaliation, including litigation costs and reasonable attorney's fees.

35.3.3 The Contractor shall post a notice provided by the City in a prominent and accessible place on any site where work pursuant to the Contract is performed that contains information about:

35.3.3(a) how its employees can report to the New York City Department of Investigation allegations of fraud, false claims, criminality or corruption arising out of or in connection with the Contract; and

35.3.3(b) the rights and remedies afforded to its employees under Administrative Code sections 7-805 (the New York City False Claims Act) and 12-113 (the Whistleblower Protection Expansion Act) for lawful acts taken in connection with the reporting of allegations of fraud, false claims, criminality or corruption in connection with the Contract.

35.3.4 For the purposes of this Article 35.3, "adverse personnel action" includes dismissal, demotion, suspension, disciplinary action, negative performance evaluation, any action resulting in loss of staff, office space, equipment or other benefit, failure to appoint, failure to promote, or any transfer or assignment or failure to transfer or assign against the wishes of the affected officer or employee.

35.3.5 This Article 35.3 is applicable to all of the Contractor's Subcontractors having subcontracts with a value in excess of \$100,000; accordingly, the Contractor shall include this rider in all subcontracts with a value in excess of \$100,000.

35.4 Article 35.3 is not applicable to this Contract if it is valued at \$100,000 or less. Articles 35.3.1, 35.3.2, 35.3.4, and 35.3.5 are not applicable to this Contract if it was solicited pursuant to a finding of an emergency.

ARTICLE 36. NO DISCRIMINATION

36.1 The Contractor specifically agrees, as required by Labor Law Section 220-e, as amended, that:

36.1.1 In the hiring of employees for the performance of Work under this Contract or any subcontract hereunder, neither the Contractor, Subcontractor, nor any person acting on behalf of such Contractor or Subcontractor, shall by reason of race, creed, color or national origin discriminate against any citizen of the State of New York who is qualified and available to perform the Work to which the employment relates;

36.1.2 Neither the Contractor, Subcontractor, nor any person on its behalf shall, in any manner, discriminate against or intimidate any employee hired for the performance of Work under this Contract on account of race, creed, color or national origin;

36.1.3 There may be deducted from the amount payable to the Contractor by the City under this Contract a penalty of fifty (\$50.00) dollars for each person for each Day during which such person was discriminated against or intimidated in violation of the provisions of this Contract; and

36.1.4 This Contract may be cancelled or terminated by the City and all moneys due or to become due hereunder may be forfeited, for a second or any subsequent violation of the terms or conditions of this Article 36.

36.1.5 This Article 36 covers all construction, alteration and repair of any public building or public work occurring in the State of New York and the manufacture, sale, and distribution of materials, equipment, and supplies to the extent that such operations are performed within the State of New York pursuant to this Contract.

36.2 The Contractor specifically agrees, as required by Section 6-108 of the Administrative Code, as amended, that:

36.2.1 It shall be unlawful for any person engaged in the construction, alteration or repair of buildings or engaged in the construction or repair of streets or highways pursuant to a Contract with the City or engaged in the manufacture, sale or distribution of materials, equipment or supplies pursuant to a Contract with the City to refuse to employ or to refuse to continue in any employment any person on account of the race, color or creed of such person.

36.2.2 It shall be unlawful for any person or any servant, agent or employee of any person, described in Article 36.1.2, to ask, indicate or transmit, orally or in writing, directly or indirectly, the race, color or creed or religious affiliation of any person employed or seeking employment from such person, firm or corporation.

36.2.3 Breach of the foregoing provisions shall be deemed a violation of a material provision of this Contract.

36.2.4 Any person, or the employee, manager or owner of or officer of such firm or corporation who shall violate any of the provisions of this Article 36.2 shall, upon conviction thereof, be punished by a fine of not more than one hundred (\$100.00) dollars or by imprisonment for not more than thirty (30) Days, or both.

36.3 This Contract is subject to the requirements of Executive Order No. 50 (1980) ("E.O. 50"), as revised, and the rules and regulations promulgated thereunder. No contract will be awarded unless and until these requirements have been complied with in their entirety. By signing this Contract, the Contractor agrees that it:

36.3.1 Will not engage in any unlawful discrimination against any employee or applicant for employment because of race, creed, color, national origin, sex, age, disability, marital status or sexual orientation with respect to all employment decisions including, but not limited to, recruitment, hiring, upgrading, demotion, downgrading, transfer, training, rates of pay or other forms of compensation, layoff, termination, and all other terms and conditions of employment; and

36.3.2 Will not engage in any unlawful discrimination in the selection of Subcontractors on the basis of the owner's race, color, creed, national origin, sex, age, disability, marital status or sexual orientation; and

36.3.3 Will state in all solicitations or advertisements for employees placed by or on behalf of the Contractor that all qualified applicants will receive consideration for employment without unlawful discrimination based on race, creed, color, national origin, sex, age, citizens status, disability, marital status, sexual orientation, or that it is an equal employment opportunity employer; and

36.3.4 Will send to each labor organization or representative of workers with which it has a collective bargaining agreement or other contract or memorandum of understanding, written notification of its equal employment opportunity commitments under E.O. 50 and the rules and regulations promulgated thereunder; and

36.3.5 Will furnish, before the award of the Contract, all information and reports, including an employment report, that are required by E.O. 50, the rules and regulations promulgated thereunder, and orders of the City Department of Business Services, Division of Labor Services (DLS) and will permit access to its books, records, and accounts by the DLS for the purposes of investigation to ascertain compliance with such rules, regulations, and orders.

36.4 The Contractor understands that in the event of its noncompliance with the nondiscrimination clauses of this Contract or with any of such rules, regulations, or orders, such noncompliance shall constitute a material breach of this Contract and noncompliance with E.O. 50 and the rules and regulations promulgated thereunder. After a hearing held pursuant to the rules of the DLS, the Director of the DLS may direct the Commissioner to impose any or all of the following sanctions:

36.4.1 Disapproval of the Contractor; and/or

36.4.2 Suspension or termination of the Contract; and/or

36.4.3 Declaring the Contractor in default; and/or

36.4.4 In lieu of any of the foregoing sanctions, the Director of the DLS may impose an employment program.

In addition to any actions taken under this Contract, failure to comply with E.O. 50 and the rules and regulations promulgated thereunder, in one or more instances, may result in a City Agency declaring the Contractor to be non-responsible in future procurements. The Contractor further agrees that it will refrain from entering into any Contract or Contract modification subject to E.O. 50 and the rules and regulations promulgated thereunder with a Subcontractor who is not in compliance with the requirements of E.O. 50 and the rules and regulations promulgated thereunder.

36.5 The Contractor specifically agrees, as required by Section 6-123 of the Administrative Code, that:

36.5.1 The Contractor will not engage in any unlawful discriminatory practice in violation of Title 8 of the Administrative Code; and

36.5.2 Any failure to comply with this Article 36.5 may subject the Contractor to the remedies set forth in Section 6-123 of the Administrative Code, including, where appropriate, sanctions such as withholding of payment, imposition of an employment program, finding the Contractor to be in default, cancellation of the Contract, or any other sanction or remedy provided by Law or Contract.

ARTICLE 37. LABOR LAW REQUIREMENTS

37.1 The Contractor shall strictly comply with all applicable provisions of the Labor Law, as amended. Such compliance is a material term of this Contract.

37.2 The Contractor specifically agrees, as required by Labor Law Sections 220 and 220-d, as amended, that:

37.2.1 **Hours of Work:** No laborer, worker, or mechanic in the employ of the Contractor, Subcontractor or other person doing or contracting to do the whole or a part of the Work contemplated by this Contract shall be permitted or required to work more than eight (8) hours in any one (1) Day, or more than five (5) Days in any one (1) week, except as provided in the Labor Law and in cases of extraordinary emergency including fire, flood, or danger to life or property, or in the case of national emergency when so proclaimed by the President of the United States of America.

37.2.2 In situations in which there are not sufficient laborers, workers, and mechanics who may be employed to carry on expeditiously the Work contemplated by this Contract as a result of such restrictions upon the number of hours and Days of labor, and the immediate commencement or prosecution or completion without undue delay of the Work is necessary for the preservation of the Site and/or for the protection of the life and limb of the persons using the same, such laborers, workers, and mechanics shall be permitted or required to

work more than eight (8) hours in any one (1) Day; or five (5) Days in any one (1) week; provided, however, that upon application of any Contractor, the Commissioner shall have first certified to the Commissioner of Labor of the State of New York (hereinafter "Commissioner of Labor") that such public Work is of an important nature and that a delay in carrying it to completion would result in serious disadvantage to the public; and provided, further, that such Commissioner of Labor shall have determined that such an emergency does in fact exist as provided in Labor Law Section 220.2.

37.2.3 Failure of the Commissioner to make such a certification to the Commissioner of Labor shall not entitle the Contractor to damages for delay or for any cause whatsoever.

37.2.4 Prevailing Rate of Wages: The wages to be paid for a legal day's Work to laborers, workers, or mechanics employed upon the Work contemplated by this Contract or upon any materials to be used thereon shall not be less than the "prevailing rate of wage" as defined in Labor Law Section 220, and as fixed by the Comptroller in the attached Schedule of Wage Rates and in updated schedules thereof. The prevailing wage rates and supplemental benefits to be paid are those in effect at the time the Work is being performed.

37.2.5 Requests for interpretation or correction in the Information for Bidders includes all requests for clarification of the classification of trades to be employed in the performance of the Work under this Contract. In the event that a trade not listed in the Contract is in fact employed during the performance of this Contract, the Contractor shall be required to obtain from the Agency the prevailing wage rates and supplementary benefits for the trades used and to complete the performance of this Contract at the price at which the Contract was awarded.

37.2.6 Minimum Wages: Except for employees whose wage is required to be fixed pursuant to Labor Law Section 220, all persons employed by the Contractor and any Subcontractor in the manufacture or furnishing of the supplies, materials, or equipment, or the furnishing of work, labor, or services, used in the performance of this Contract, shall be paid, without subsequent deduction or rebate unless expressly authorized by Law, not less than the sum mandated by Law.

37.3 Working Conditions: No part of the Work, labor or services shall be performed or rendered by the Contractor in any plants, factories, buildings or surroundings or under working conditions which are unsanitary or hazardous or dangerous to the health and safety of employees engaged in the performance of this Contract. Compliance with the safety, sanitary, and factory inspection Laws of the state in which the Work is to be performed shall be prima facie evidence of compliance with this Article 37.3.

37.4 Prevailing Wage Enforcement: The Contractor agrees to pay for all costs incurred by the City in enforcing prevailing wage requirements, including the cost of any investigation conducted by or on behalf of the Agency or the Comptroller, where the City discovers a failure to comply with any of the requirements of this Article 37 by the Contractor or its Subcontractor(s). The Contractor also agrees that, should it fail or refuse to pay for any such investigation, the Agency is hereby authorized to deduct from a Contractor's account an amount equal to the cost of such investigation.

37.4.1 The Labor Law Section 220 and Section 220-d, as amended, provide that this Contract shall be forfeited and no sum paid for any Work done hereunder on a second conviction for willfully paying less than:

37.4.1(a) The stipulated prevailing wage scale as provided in Labor Law section 220, as amended, or

37.4.1(b) The stipulated minimum hourly wage scale as provided in Labor Law section 220-d, as amended.

37.4.2 For any breach or violation of either working conditions (Article 37.3) or minimum wages (Article 37.2.6) provisions, the party responsible therefor shall be liable to the City for liquidated damages, which may be withheld from any amounts due on any contracts with the City of such party responsible, or may be recovered in actions brought by the City Corporation Counsel in the name of the City, in addition to damages for any other breach of this Contract, for a sum equal to the amount of any underpayment of wages due to any employee engaged in the performance of this Contract. In addition, the Commissioner shall have the right to cancel contracts and enter into other contracts for the completion of the original contract, with or without public letting, and the original Contractor shall be liable for any additional cost. All sums withheld or recovered as deductions, rebates, refunds, or underpayment of wages hereunder, shall be held in a special deposit account and shall be paid without interest, on order of the Comptroller, directly to the employees who have been paid less than minimum rates of pay as set forth herein and on whose account such sums were withheld or recovered, provided that no claims by employees for such payments shall be entertained unless made within two (2) years from the date of actual notice to the Contractor of the withholding or recovery of such sums by the City.

37.4.3 A determination by the Comptroller that a Contractor and/or its Subcontractor willfully violated Labor Law Section 220 will be forwarded to the City's five District Attorneys for review.

37.4.4 The Contractor's or Subcontractor's noncompliance with this Article 37.4 and Labor Law Section 220 may result in an unsatisfactory performance evaluation and the Comptroller may also find and determine that the Contractor or Subcontractor willfully violated the New York Labor Law.

37.4.4(a) An unsatisfactory performance evaluation for noncompliance with this Article 37.4 may result in a determination that the Contractor is a non-responsible bidder on subsequent procurements with the City and thus a rejection of a future award of a contract with the City, as well as any other sanctions provided for by Law.

37.4.4(b) Labor Law Section 220-b, as amended, provides that when two (2) final determinations have been rendered against a Contractor or Subcontractor within any consecutive six (6) year period determining that such Contractor or Subcontractor has willfully failed to pay the prevailing rate of wages or to provide supplements in accordance with the Labor Law and this Article 37.4, whether such failures were concurrent or consecutive and whether or not such final determinations concerning separate public works projects are rendered simultaneously, such Contractor or Subcontractor shall be ineligible to submit a bid on or be awarded any public works contract with the City for a period of five (5) years from the second final determination. If the final determination involves the falsification of payroll records or the kickback of wages or supplements, the Contractor or Subcontractor shall be ineligible to submit a bid on or be awarded any public works contract with the City for a period of five (5) years from the first final determination.

37.4.4(c) Labor Law Section 220, as amended, provides that the Contractor or Subcontractor found to have violated this Article 37.4 may be directed to make payment of wages or supplements including interest found to be due, and the Contractor or Subcontractor may be directed to make payment of a further sum as

a civil penalty in an amount not exceeding twenty-five (25%) percent of the total amount found to be due.

37.5 The Contractor and its Subcontractors shall within ten (10) Days after mailing of a Notice of Award or written order, post in prominent and conspicuous places in each and every plant, factory, building, and structure where employees of the Contractor and its Subcontractors engaged in the performance of this Contract are employed, notices furnished by the City, in relation to prevailing wages and supplements, minimum wages, and other stipulations contained in Sections 220 and 220-h of the Labor Law, and the Contractor and its Subcontractors shall continue to keep such notices posted in such prominent and conspicuous places until Final Acceptance of the supplies, materials, equipment, or Work, labor, or services required to be furnished or rendered under this Contract.

37.6 The Contractor shall strictly comply with all of the provisions of Articles 37.6.1 through 37.6.5, and provide for all workers, laborers or mechanics in its employ, the following:

37.6.1 Notices Posted At Site: Post, in a location designated by the City, schedules of prevailing wages and supplements for this Project, a copy of all re-determinations of such schedules for the Project, the Workers' Compensation Law Section 51 notice, all other notices required by Law to be posted at the Site, the City notice that this Project is a public works project on which each worker is entitled to receive the prevailing wages and supplements for the occupation at which he or she is working, and all other notices which the City directs the Contractor to post. The Contractor shall provide a surface for such notices which is satisfactory to the City. The Contractor shall maintain and keep current such notices in a legible manner and shall replace any notice or schedule which is damaged, defaced, illegible or removed for any reason. The Contractor shall post such notices before commencing any Work on the Site and shall maintain such notices until all Work on the Site is complete; and

37.6.2 Daily Site Sign-in Sheets: Maintain daily Site sign-in sheets, and require that Subcontractors maintain daily Site sign-in sheets for its employees, which include blank spaces for an employee's name to be both printed and signed, job title, date started and Social Security number, the time the employee began work and the time the employee left work, until Final Acceptance of the supplies, materials, equipment, or Work, labor, or services to be furnished or rendered under this Contract unless exception is granted by the Comptroller upon application by the Agency. In the alternative, subject to the approval of the CCPO, the Contractor and Subcontractor may maintain an electronic or biometric sign-in system, which provides the information required by this Article 37.6.2; and

37.6.3 Individual Employee Information Notices: Distribute a notice to each worker, laborer or mechanic employed under this Contract, in a form provided by the Agency, that this Project is a public works project on which each worker, laborer or mechanic is entitled to receive the prevailing rate of wages and supplements for the occupation at which he or she is working. If the total cost of the Work under this Contract is at least two hundred fifty thousand (\$250,000) dollars, such notice shall also include a statement that each worker, laborer or mechanic must be certified prior to performing any Work as having successfully completed a course in construction safety and health approved by the United States Department of Labor's Occupational Safety and Health Administration that is at least ten (10) hours in duration. Such notice shall be distributed to each worker before he or she starts performing any Work of this Contract and with the first paycheck after July first of each year. "Worker, laborer or mechanic" includes employees of the Contractor and all Subcontractors and all employees of suppliers entering the Site. At the time of distribution, the Contractor shall have each worker, laborer or mechanic sign a statement, in a form provided by the Agency, certifying that the worker has received the notice required by this

Article 37.6.3, which signed statement shall be maintained with the payroll records required by this Contract; and

37.6.3(a) The Contractor and each Subcontractor shall notify each worker, laborer or mechanic employed under this Contract in writing of the prevailing rate of wages for their particular job classification. Such notification shall be given to every worker, laborer, and mechanic on their first pay stub and with every pay stub thereafter; and

37.6.4 Site Laminated Identification Badges: The Contractor shall provide laminated identification badges which include a photograph of the worker's, laborer's or mechanic's face and indicate the worker's, laborer's or mechanic's name, trade, employer's name, and employment starting date (month/day/year). Further, the Contractor shall require as a condition of employment on the Site, that each and every worker, laborer or mechanic wear the laminated identification badge at all times and that it may be seen by any representative of the City. The Commissioner may grant a written waiver from the requirement that the laminated identification badge include a photograph if the Contractor demonstrates that the identity of an individual wearing a laminated identification badge can be easily verified by another method; and

37.6.5 Language Other Than English Used On Site: Provide the ACCO notice when three (3) or more employees (worker and/or laborer and/or mechanic) on the Site, at any time, speak a language other than English. The ACCO will then provide the Contractor the notices described in Article 37.6.1 in that language or languages as may be required. The Contractor is responsible for all distributions under this Article 37; and

37.6.6 Provision of Records: The Contractor and Subcontractor(s) shall produce within five (5) Days on the Site of the Work and upon a written order of the Engineer, the Commissioner, the ACCO, the Agency EAO, or the Comptroller, such records as are required to be kept by this Article 37.6; and

37.6.7 The Contractor and Subcontractor(s) shall pay employees by check or direct deposit. If this Contract is for an amount greater than one million (\$1,000,000) dollars, checks issued by the Contractor to covered employees shall be generated by a payroll service or automated payroll system (an in-house system may be used if approved by the Agency). For any subcontract for an amount greater than seven hundred fifty thousand (\$750,000) dollars, checks issued by a Subcontractor to covered employees shall be generated by a payroll service or automated payroll system (an in-house system may be used if approved by the Agency); and

37.6.8 The failure of the Contractor or Subcontractor(s) to comply with the provisions of Articles 37.6.1 through 37.6.7 may result in the Commissioner declaring the Contractor in default and/or the withholding of payments otherwise due under the Contract.

37.7 The Contractor and its Subcontractors shall keep such employment and payroll records as are required by Section 220 of the Labor Law. The failure of the Contractor or Subcontractor(s) to comply with the provisions of this Article 37.7 may result in the Commissioner declaring the Contractor in default and/or the withholding of payments otherwise due under the Contract.

37.8 At the time the Contractor makes application for each partial payment and for final payment, the Contractor shall submit to the Commissioner a written payroll certification, in the form provided by this Contract, of compliance with the prevailing wage, minimum wage, and other provisions and stipulations required by Labor Law Section 220 and of compliance with the training requirements of

Labor Law Section 220-h set forth in Article 35.2. This certification of compliance shall be a condition precedent to payment and no payment shall be made to the Contractor unless and until each such certification shall have been submitted to and received by the Commissioner.

37.9 This Contract is executed by the Contractor with the express warranty and representation that the Contractor is not disqualified under the provisions of Section 220 of the Labor Law from the award of the Contract.

37.10 Any breach or violation of any of the foregoing shall be deemed a breach or violation of a material provision of this Contract, and grounds for cancellation thereof by the City.

ARTICLE 38. PAYROLL REPORTS

38.1 The Contractor and its Subcontractor(s) shall maintain on the Site during the performance of the Work the original payrolls or transcripts thereof which the Contractor and its Subcontractor(s) are required to maintain and shall submit such original payrolls or transcripts, subscribed and affirmed by it as true, within thirty (30) Days after issuance of its first payroll, and every thirty (30) Days thereafter, pursuant to Labor Law Section 220(3-a)(a)(iii). The Contractor and Subcontractor(s) shall submit such original payrolls or transcripts along with each and every payment requisition. If payment requisitions are not submitted at least once a month, the Contractor and its Subcontractor(s) shall submit original payrolls and transcripts both along with its payment requisitions and independently of its payment requisitions.

38.2 The Contractor shall maintain payrolls or transcripts thereof for six (6) years from the date of completion of the Work on this Contract. If such payrolls and transcripts are maintained outside of New York City after the completion of the Work and their production is required pursuant to this Article 38, the Contractor shall produce such records in New York City upon request by the City.

38.3 The Contractor and Subcontractor(s) shall comply with any written order, direction, or request made by the Engineer, the Commissioner, the ACCO, the Agency EAO, the Agency Labor Law Investigator(s), or the Comptroller, to provide to the requesting party any of the following information and/or records within five (5) Days of such written order, direction, or request:

38.3.1 Such original payrolls or transcripts thereof subscribed and affirmed by it as true and the statements signed by each worker pursuant to this Chapter VIII; and/or

38.3.2 Attendance sheets for each Day on which any employee of the Contractor and/or any of the Subcontractor(s) performed Work on the Site, which attendance sheet shall be in a form acceptable to the Agency and shall provide information acceptable to the Agency to identify each such employee; and/or

38.3.3 Any other information to satisfy the Engineer, the Commissioner, the ACCO, the Agency EAO, the Agency Labor Law Investigator(s) or the Comptroller, that this Chapter VIII and the Labor Law, as to the hours of employment and prevailing rates of wages and/or supplemental benefits, are being observed.

38.4 The failure of the Contractor or Subcontractor(s) to comply with the provisions of Articles 38.1 and/or 38.2 may result in the Commissioner declaring the Contractor in default and/or the withholding of payments otherwise due under the Contract.

ARTICLE 39. DUST HAZARDS

39.1 Should a harmful dust hazard be created in performing the Work of this Contract, for the elimination of which appliances or methods have been approved by the Board of Standards and Appeals of the City of New York, such appliances and methods shall be installed, maintained, and effectively operated during the continuance of such harmful dust hazard. Failure to comply with this provision after notice shall make this Contract voidable at the sole discretion of the City.

CHAPTER IX PARTIAL AND FINAL PAYMENTS

ARTICLE 40. CONTRACT PRICE

40.1 The City shall pay, and the Contractor agrees to accept, in full consideration for the Contractor's performance of the Work subject to the terms and conditions hereof, the lump sum price or unit prices for which this Contract was awarded, plus the amount required to be paid for any Extra Work ordered by the Commissioner under Article 25, less credit for any Work omitted pursuant to Article 29.

ARTICLE 41. BID BREAKDOWN ON LUMP SUM

41.1 Within fifteen (15) Days after the commencement date specified in the Notice to Proceed or Order to Work, unless otherwise directed by the Resident Engineer, the Contractor shall submit to the Resident Engineer a breakdown of its bid price, or of lump sums bid for items of the Contract, showing the various operations to be performed under the Contract, as directed in the progress schedule required under Article 9, and the value of each of such operations, the total of such items to equal the lump sum price bid. Said breakdown must be approved in writing by the Resident Engineer.

41.2 No partial payment will be approved until the Contractor submits a bid breakdown that is acceptable to the Resident Engineer.

41.3 The Contractor shall also submit such other information relating to the bid breakdown as directed by the Resident Engineer. Thereafter, the breakdown may be used only for checking the Contractor's applications for partial payments hereunder, but shall not be binding upon the City, the Commissioner, or the Engineer for any purpose whatsoever.

ARTICLE 42. PARTIAL PAYMENTS

42.1 From time to time as the Work progresses satisfactorily, but not more often than once each calendar month (except where the Commissioner approves in writing the submission of invoices on a more frequent basis and for invoices relating to Work performed pursuant to a change order), the Contractor may submit to the Engineer a requisition for a partial payment in the prescribed form, which shall contain an estimate of the quantity and the fair value of the Work done during the payment period.

42.2 Partial payments may be made for materials, fixtures, and equipment in advance of their actual incorporation in the Work, as the Commissioner may approve, and upon the terms and conditions set forth in the General Conditions.

42.3 The Contractor shall also submit to the Commissioner in connection with every application for partial payment a verified statement in the form prescribed by the Comptroller setting forth the information required under Labor Law Section 220-a.

42.4 Within thirty (30) Days after receipt of a satisfactory payment application, and within sixty (60) Days after receipt of a satisfactory payment application in relation to Work performed pursuant to a change order, the Engineer will prepare and certify, and the Commissioner will approve, a voucher for a partial payment in the amount of such approved estimate, less any and all deductions authorized to be made by the Commissioner under the terms of this Contract or by Law.

ARTICLE 43. PROMPT PAYMENT

43.1 The Prompt Payment provisions of the PPB Rules in effect at the time of the bid will be applicable to payments made under this Contract. The provisions require the payment to the Contractor of interest on payments made after the required payment date, except as set forth in the PPB Rules.

43.2 The Contractor shall submit a proper invoice to receive payment, except where the Contract provides that the Contractor will be paid at predetermined intervals without having to submit an invoice for each scheduled payment.

43.3 Determination of interest due will be made in accordance with the PPB Rules.

43.4 If the Contractor is paid interest, the proportionate share(s) of that interest shall be forwarded by the Contractor to its Subcontractor(s).

43.5 The Contractor shall pay each Subcontractor or Materialman not later than seven (7) Days after receipt of payment out of amounts paid to the Contractor by the City for Work performed by the Subcontractor or Materialman under this Contract.

43.5.1 If Contractor fails to make any payment to any Subcontractor or Materialman within seven (7) Days after receipt of payment by the City pursuant to this Article 43.5, then the Contractor shall pay interest on amounts due to such Subcontractor or Materialman at the rate of interest in effect on the date such payment is made by the Contractor computed in accordance with Section 756-b (1)(b) of the New York General Business Law. Accrual of interest shall commence on the Day immediately following the expiration of the seventh Day following receipt of payment by the Contractor from the City and shall end on the date on which payment is made.

43.6 The Contractor shall include in each of its subcontracts a provision requiring each Subcontractor to make payment to each of its Subcontractors or Materialmen for Work performed under this Contract in the same manner and within the same time period set forth above.

ARTICLE 44. SUBSTANTIAL COMPLETION PAYMENT

44.1 The Contractor shall submit with the Substantial Completion requisition:

44.1.1 A final verified statement of any pending Article 27 disputes in accordance with the PPB Rules and this Contract and any and all alleged claims against the City, in any way connected with or arising out of this Contract (including those as to which details may have been furnished pursuant to Articles 11, 27, 28, and 30) setting forth with respect to each

such claim the total amount thereof, the various items of labor and materials included therein, and the alleged value of each item; and if the alleged claim be one for delay, the alleged cause of each such delay, the period or periods of time, giving the dates when the Contractor claims the performance of the Work or a particular part thereof was delayed, and an itemized statement and breakdown of the amount claimed for each such delay.

44.1.1(a) With respect to each such claim, the Commissioner, the Comptroller and, in the event of litigation, the City Corporation Counsel shall have the same right to inspect, and to make extracts or copies of, the Contractor's books, vouchers, records, etc., as is referred to in Articles 11, 27, 28, and 30. Nothing contained in this Article 44.1.1(a) is intended to or shall relieve the Contractor from the obligation of complying strictly with Articles 11, 27, 28, and 30. The Contractor is warned that unless such claims are completely set forth as herein required, the Contractor upon acceptance of the Substantial Completion payment pursuant to this Article 44, will have waived any such claims.

44.1.2 A Final Approved Punch List.

44.1.3 Where required, a request for an extension of time to achieve Substantial Completion or final extension of time.

44.2 The Commissioner shall issue a voucher calling for payment of any part or all of the balance due for Work performed under the Contract, including monies retained under Article 21, less any and all deductions authorized to be made by the Commissioner, under this Contract or by Law, and less twice the amount the Commissioner considers necessary to ensure the completion of the balance of the Work by the Contractor. Such a payment shall be considered a partial and not a final payment. No Substantial Completion payment shall be made under this Article 44 where the Contractor failed to complete the Work within the time fixed for such completion in the Schedule A of the General Conditions, or within the time to which completion may have been extended, until an extension or extensions of time for the completion of Work have been acted upon pursuant to Article 13.

44.3 No further partial payments shall be made to the Contractor after Substantial Completion, except the Substantial Completion payment and payment pursuant to any Contractor's requisition that were properly filed with the Commissioner prior to the date of Substantial Completion; however, the Commissioner may grant a waiver for further partial payments after the date of Substantial Completion to permit payments for change order Work and/or release of retainage and deposits pursuant to Articles 21 and 24. Such waiver shall be in writing.

44.4 The Contractor acknowledges that nothing contained in this Article 44 is intended to or shall in any way diminish the force and effect of Article 13.

ARTICLE 45. FINAL PAYMENT

45.1 After completion and Final Acceptance of the Work, the Contractor shall submit all required certificates and documents, together with a requisition for the balance claimed to be due under the Contract, less the amount authorized to be retained for maintenance under Article 24. Such submission shall be within 90 days of the date of the Commissioner's written determination of Final Acceptance, or within such additional time as may be granted by the Commissioner in writing. If the Contractor fails to submit all required certificates and documents within the time allowed, no payment of the balance claimed shall be made to the Contractor and the Contractor shall be deemed to have forfeited its right to

payment of any balance claimed. A verified statement similar to that required in connection with applications for partial payments shall also be submitted to the Commissioner.

45.2 Amended Verified Statement of Claims: The Contractor shall also submit with the final requisition any amendments to the final verified statement of any pending dispute resolution procedures in accordance with the PPB Rules and this Contract and any and all alleged claims against the City, in any way connected with or arising out of this Contract (including those as to which details may have been furnished pursuant to Articles 11, 27, 28, and 30) that have occurred subsequent to Substantial Completion, setting forth with respect to each such claim the total amount thereof, the various items of labor and materials included therein, and the alleged value of each such item; and if the alleged claim be one for delay, the alleged cause of each such delay, the period or periods of time, giving the dates when the Contractor claims the performance of the Work or a particular part thereof was delayed, and an itemized statement and breakdown of the amount claimed for each such delay. With reference to each such claim, the Commissioner, the Comptroller and, in the event of litigation, the City Corporation Counsel shall have the same right to inspect, and to make extracts or copies of, the Contractor's books, vouchers, records, etc., as is referred to in Articles 11, 27, 28, and 30. Nothing contained in this Article 45.2, is intended to or shall relieve the Contractor from the obligation of complying strictly with Articles 11, 27, 28, and 30. The Contractor is warned that unless such claims are completely set forth as herein required, the Contractor, upon acceptance of the Final Payment pursuant to Article 46, will have waived any such claims.

45.3 Preparation of Final Voucher: Upon determining the balance due hereunder other than on account of claims, the Engineer will prepare and certify, for the Commissioner's approval, a voucher for final payment in that amount less any and all deductions authorized to be made by the Commissioner under this Contract or by Law. In the case of a lump sum Contract, the Commissioner shall certify the voucher for final payment within thirty (30) Days from the date of completion and acceptance of the Work, provided all requests for extensions of time have been acted upon.

45.3.1 All prior certificates and vouchers upon which partial payments were made, being merely estimates made to enable the Contractor to prosecute the Work more advantageously, shall be subject to correction in the final voucher, and the certification of the Engineer thereon and the approval of the Commissioner thereof, shall be conditions precedent to the right of the Contractor to receive any money hereunder. Such final voucher shall be binding and conclusive upon the Contractor.

45.3.2 Payment pursuant to such final voucher, less any deductions authorized to be made by the Commissioner under this Contract or by Law, shall constitute the final payment, and shall be made by the Comptroller within thirty (30) Days after the filing of such voucher in his/her office.

45.4. The Contractor acknowledges that nothing contained in this Article 45 is intended to or shall in any way diminish the force and effect of Article 13.

ARTICLE 46. ACCEPTANCE OF FINAL PAYMENT

46.1 The acceptance by the Contractor, or by anyone claiming by or through it, of the final payment, whether such payment be made pursuant to any judgment of any court, or otherwise, shall constitute and operate as a release of the City from any and all claims of and liability to the Contractor for anything heretofore done or furnished for the Contractor relating to or arising out of this Contract and the Work done hereunder, and for any prior act, neglect or default on the part of the City or any of its officials, agents or employees, excepting only a claim against the City for the amounts deducted or retained in accordance with the terms and provisions of this Contract or by Law, and excepting any

claims, not otherwise waived, or any pending dispute resolution procedures which are contained in the verified statement filed with the Contractor's substantial and final requisitions pursuant to Articles 44 and 45.

46.2 The Contractor is warned that the execution by it of a release, in connection with the acceptance of the final payment, containing language purporting to reserve claims other than those herein specifically excepted from the operation of this Article 46, or those for amounts deducted by the Commissioner from the final requisition or from the final payment as certified by the Engineer and approved by the Commissioner, shall not be effective to reserve such claims, anything stated to the Contractor orally or in writing by any official, agent or employee of the City to the contrary notwithstanding.

46.3 Should the Contractor refuse to accept the final payment as tendered by the Comptroller, it shall constitute a waiver of any right to interest thereon.

46.4 The Contractor, however, shall not be barred by this Article 46 from commencing an action for breach of Contract to the extent permitted by Law and by the terms of the Contract for any claims that are contained in the verified statement filed with the Contractor's substantial and final requisitions pursuant to Articles 44 and 45 or that arose after submission of the final payment requisition, provided that a detailed and verified statement of claim is served upon the contracting Agency and Comptroller not later than forty (40) Days after the making of such final payment by electronic funds transfer (EFT) or the mailing of such final payment. The statement shall specify the items upon which the claim will be based and any such claim shall be limited to such items.

ARTICLE 47. APPROVAL BY PUBLIC DESIGN COMMISSION

47.1 All works of art, including paintings, mural decorations, stained glass, statues, bas-reliefs, and other sculptures, monuments, fountains, arches, and other structures of a permanent character intended for ornament or commemoration, and every design of the same to be used in the performance of this Contract, and the design of all bridges, approaches, buildings, gates, fences, lamps, or structures to be erected, pursuant to the terms of this Contract, shall be submitted to the Art Commission, d/b/a the Public Design Commission of the City of New York, and shall be approved by the Public Design Commission prior to the erection or placing in position of the same. The final payment shall not become due or payable under this Contract unless and until the Public Design Commission shall certify that the design for the Work herein contracted for has been approved by the said Public Design Commission, and that the same has been executed in substantial accordance with the design so approved, pursuant to the provisions of Chapter 37, Section 854 of the City Charter, as amended.

CHAPTER X CONTRACTOR'S DEFAULT

ARTICLE 48. COMMISSIONER'S RIGHT TO DECLARE CONTRACTOR IN DEFAULT

48.1 In addition to those instances specifically referred to in other Articles herein, the Commissioner shall have the right to declare the Contractor in default of this Contract if:

48.1.1 The Contractor fails to commence Work when notified to do so by the Commissioner; or

if

48.1.2 The Contractor shall abandon the Work; or if

48.1.3 The Contractor shall refuse to proceed with the Work when and as directed by the Commissioner; or if

48.1.4 The Contractor shall, without just cause, reduce its working force to a number which, if maintained, would be insufficient, in the opinion of the Commissioner, to complete the Work in accordance with the progress schedule; or if

48.1.5 The Contractor shall fail or refuse to increase sufficiently such working force when ordered to do so by the Commissioner; or if

48.1.6 The Contractor shall sublet, assign, transfer, convert or otherwise dispose of this Contract other than as herein specified; or sell or assign a majority interest in the Contractor; or if

48.1.7 The Contractor fails to secure and maintain all required insurance; or if

48.1.8 A receiver or receivers are appointed to take charge of the Contractor's property or affairs; or if

48.1.9 The Commissioner shall be of the opinion that the Contractor is or has been unnecessarily or unreasonably or willfully delaying the performance and completion of the Work, or the award of necessary subcontracts, or the placing of necessary material and equipment orders; or if

48.1.10 The Commissioner shall be of the opinion that the Contractor is or has been willfully or in bad faith violating any of the provisions of this Contract; or if

48.1.11 The Commissioner shall be of the opinion that the Work cannot be completed within the time herein provided therefor or within the time to which such completion may have been extended; provided, however, that the impossibility of timely completion is, in the Commissioner's opinion, attributable to conditions within the Contractor's control; or if

48.1.12 The Work is not completed within the time herein provided therefor or within the time to which the Contractor may be entitled to have such completion extended; or if

48.1.13 Any statement or representation of the Contractor in the Contract or in any document submitted by the Contractor with respect to the Work, the Project, or the Contract (or for purposes of securing the Contract) was untrue or incorrect when made; or if

48.1.14 The Contractor or any of its officers, directors, partners, five (5%) percent shareholders, principals, or other persons substantially involved in its activities, commits any of the acts or omissions specified as the grounds for debarment in the PPB Rules.

48.2 Before the Commissioner shall exercise his/her right to declare the Contractor in default, the Commissioner shall give the Contractor an opportunity to be heard, upon not less than two (2) Days notice.

ARTICLE 49. EXERCISE OF THE RIGHT TO DECLARE DEFAULT

49.1 The right to declare the Contractor in default for any of the grounds specified or referred to in Article 48 shall be exercised by sending the Contractor a notice, signed by the Commissioner, setting forth the ground or grounds upon which such default is declared (hereinafter referred to as a "Notice of Default").

49.2 The Commissioner's determination that the Contractor is in default shall be conclusive, final, and binding on the parties and such a finding shall preclude the Contractor from commencing a plenary action for any damages relating to the Contract. If the Contractor protests the determination of the Commissioner, the Contractor may commence an action in a court of competent jurisdiction of the State of New York under Article 78 of the New York Civil Practice Law and Rules.

ARTICLE 50. QUITTING THE SITE

50.1 Upon receipt of such notice the Contractor shall immediately discontinue all further operations under this Contract and shall immediately quit the Site, leaving untouched all plant, materials, equipment, tools, and supplies then on the Site.

ARTICLE 51. COMPLETION OF THE WORK

51.1 The Commissioner, after declaring the Contractor in default, may then have the Work completed by such means and in such manner, by contract with or without public letting, or otherwise, as he/she may deem advisable, utilizing for such purpose such of the Contractor's plant, materials, equipment, tools, and supplies remaining on the Site, and also such Subcontractors, as he/she may deem advisable.

51.2 After such completion, the Commissioner shall make a certificate stating the expense incurred in such completion, which shall include the cost of re-letting and also the total amount of liquidated damages (at the rate provided for in the Contract) from the date when the Work should have been completed by the Contractor in accordance with the terms hereof to the date of actual completion of the Work. Such certificate shall be binding and conclusive upon the Contractor, its sureties, and any person claiming under the Contractor, as to the amount thereof.

51.3 The expense of such completion, including any and all related and incidental costs, as so certified by the Commissioner, and any liquidated damages assessed against the Contractor, shall be charged against and deducted out of monies which are earned by the Contractor prior to the date of default. Should the expense of such completion, as certified by the Commissioner, exceed the total sum which would have been payable under the Contract if it had been completed by the Contractor, any excess shall be paid by the Contractor.

ARTICLE 52. PARTIAL DEFAULT

52.1 In case the Commissioner shall declare the Contractor in default as to a part of the Work only, the Contractor shall discontinue such part, shall continue performing the remainder of the Work in strict conformity with the terms of this Contract, and shall in no way hinder or interfere with any Other

Contractor(s) or persons whom the Commissioner may engage to complete the Work as to which the Contractor was declared in default.

52.2 The provisions of this Chapter relating to declaring the Contractor in default as to the entire Work shall be equally applicable to a declaration of partial default, except that the Commissioner shall be entitled to utilize for completion of the part of the Work as to which the Contractor was declared in default only such plant, materials, equipment, tools, and supplies as had been previously used by the Contractor on such part.

ARTICLE 53. PERFORMANCE OF UNCOMPLETED WORK

53.1 In completing the whole or any part of the Work under the provisions of this Chapter X, the Commissioner shall have the power to depart from or change or vary the terms and provisions of this Contract, provided, however, that such departure, change or variation is made for the purpose of reducing the time or expense of such completion. Such departure, change or variation, even to the extent of accepting a lesser or different performance, shall not affect the conclusiveness of the Commissioner's certificate of the cost of completion referred to in Article 51, nor shall it constitute a defense to an action to recover the amount by which such certificate exceeds the amount which would have been payable to the Contractor hereunder but for its default.

ARTICLE 54. OTHER REMEDIES

54.1 In addition to the right to declare the Contractor in default pursuant to this Chapter X, the Commissioner shall have the absolute right, in his/her sole discretion and without a hearing, to complete or cause to be completed in the same manner as described in Articles 51 and 53, any or all unsatisfactory or uncompleted punch list Work that remains after the completion date specified in the Final Approved Punch List. A written notice of the exercise of this right shall be sent to the Contractor who shall immediately quit the Site in accordance with the provisions of Article 50.

54.2 The expense of completion permitted under Article 54.1, including any and all related and incidental costs, as so certified by the Commissioner, shall be charged against and deducted out of monies which have been earned by the Contractor prior to the date of the exercise of the right set forth in Article 54.1; the balance of such monies, if any, subject to the other provisions of this Contract, to be paid to the Contractor without interest after such completion. Should the expense of such completion, as certified by the Commissioner, exceed the total sum which would have been payable under the Contract if it had been completed by the Contractor, any excess shall be paid by the Contractor.

54.3 The previous provisions of this Chapter X shall be in addition to any and all other remedies available under Law or in equity.

54.4 The exercise by the City of any remedy set forth herein shall not be deemed a waiver by the City of any other legal or equitable remedy contained in this Contract or provided under Law.

**CHAPTER XI
MISCELLANEOUS PROVISIONS**

ARTICLE 55. CONTRACTOR'S WARRANTIES

55.1 In consideration of, and to induce, the award of this Contract to the Contractor, the Contractor represents and warrants:

55.1.1 That it is financially solvent, sufficiently experienced and competent to perform the Work; and

55.1.2 That the facts stated in its bid and the information given by it pursuant to the Information for Bidders is true and correct in all respects; and

55.1.3 That it has read and complied with all requirements set forth in the Contract.

ARTICLE 56. CLAIMS AND ACTIONS THEREON

56.1 Any claim, that is not subject to dispute resolution under the PPB Rules or this Contract, against the City for damages for breach of Contract shall not be made or asserted in any action, unless the Contractor shall have strictly complied with all requirements relating to the giving of notice and of information with respect to such claims, as herein before provided.

56.2 Nor shall any action be instituted or maintained on any such claims unless such action is commenced within six (6) months after **Substantial Completion**; except that:

56.2.1 Any claims arising out of events occurring after **Substantial Completion** and before **Final Acceptance of the Work** shall be asserted within six (6) months of **Final Acceptance of the Work**;

56.2.2 Any claims for monies deducted, retained or withheld under the provisions of this Contract shall be asserted within six (6) months after the date when such monies otherwise become due and payable hereunder; and

56.2.3 If the Commissioner exercises his/her right to terminate the Contract pursuant to Article 64, any such action shall be commenced within six (6) months of the date the Commissioner exercises said right.

ARTICLE 57. INFRINGEMENT

57.1 The Contractor shall be solely responsible for and shall defend, indemnify, and hold the City harmless from any and all claims (even if the allegations of the lawsuit are without merit) and judgments for damages and from costs and expenses to which the City may be subject to or which it may suffer or incur allegedly arising out of or in connection with any infringement by the Contractor of any copyright, trade secrets, trademark or patent rights or any other property or personal right of any third party by the Contractor and/or its Subcontractors in the performance or completion of the Work. Insofar as the facts or Law relating to any claim would preclude the City from being completely indemnified by the Contractor, the City shall be partially indemnified by the Contractor to the fullest extent permitted by Law.

ARTICLE 58. NO CLAIM AGAINST OFFICIALS, AGENTS OR EMPLOYEES

58.1 No claim whatsoever shall be made by the Contractor against any official, agent or employee of the City for, or on account of, anything done or omitted to be done in connection with this Contract.

ARTICLE 59. SERVICE OF NOTICES

59.1 The Contractor hereby designates the business address, fax number, and email address specified in its bid, as the place where all notices, directions or other communications to the Contractor may be delivered, or to which they may be mailed. Any notice, direction, or communication from either party to the other shall be in writing and shall be deemed to have been given when (i) delivered personally; (ii) sent by certified mail, return receipt requested; (iii) delivered by overnight or same day courier service in a properly addressed envelope with confirmation; or (iv) sent by fax or email and, unless receipt of the fax or e-mail is acknowledged by the recipient by fax or e-mail, deposited in a post office box regularly maintained by the United States Postal Service in a properly addressed, postage pre-paid envelope.

59.2 Contractor's notice address, email address, or fax number may be changed at any time by an instrument in writing, executed and acknowledged by the Contractor, and delivered to the Commissioner.

59.3 Nothing herein contained shall, however, be deemed to preclude or render inoperative the service of any notice, direction or other communication upon the Contractor personally, or, if the Contractor is a corporation, upon any officer thereof.

ARTICLE 60. UNLAWFUL PROVISIONS DEEMED STRICKEN FROM CONTRACT

60.1 If this Contract contains any unlawful provision not an essential part of the Contract and which shall not appear to have been a controlling or material inducement to the making thereof, the same shall be deemed of no effect and shall, upon notice by either party, be deemed stricken from the Contract without affecting the binding force of the remainder.

ARTICLE 61. ALL LEGAL PROVISIONS DEEMED INCLUDED

61.1 It is the intent and understanding of the parties to this Contract that each and every provision of Law required to be inserted in this Contract shall be and is inserted herein. Furthermore, it is hereby stipulated that every such provision is to be deemed to be inserted herein, and if, through mistake or otherwise, any such provision is not inserted, or is not inserted in correct form, then this Contract shall forthwith upon the application of either party be amended by such insertion so as to comply strictly with the Law and without prejudice to the rights of either party hereunder.

ARTICLE 62. TAX EXEMPTION

62.1 The City is exempt from payment of Federal, State, and local taxes, including sales and compensating use taxes of the State of New York and its cities and counties on all tangible personal property sold to the City pursuant to the provisions of this Contract. These taxes are not to be included in bids. However, this exemption does not apply to tools, machinery, equipment or other property leased by or to the Contractor, Subcontractor or Materialman or to tangible personal property which, even

though it is consumed, is not incorporated into the completed Work (consumable supplies) and tangible personal property that the Contractor is required to remove from the Site during or upon completion of the Work. The Contractor and its Subcontractors and Materialmen shall be responsible for and pay any and all applicable taxes, including sales and compensating use taxes, on such leased tools, machinery, equipment or other property and upon all such consumable supplies and tangible personal property that the Contractor is required to remove from the Site during or upon completion of the Work.

62.2 The Contractor agrees to sell and the City agrees to purchase all tangible personal property, other than consumable supplies and other tangible personal property that the Contractor is required to remove from the Site during or upon completion of the Work, that is required, necessary or proper for or incidental to the construction of the Project covered by this Contract. The sum paid under this Contract for such tangible personal property shall be in full payment and consideration for the sale of such tangible personal property.

62.2.1 The Contractor agrees to construct the Project and to perform all Work, labor and services rendered, necessary, proper or incidental thereto for the sum shown in the bid for the performance of such Work, labor, and services, and the sum so paid pursuant to this Contract for such Work, labor, and services, shall be in full consideration for the performance by the Contractor of all its duties and obligations under this Contract in connection with said Work, labor, and services.

62.3 20 NYCRR Section 541.3(d) provides that a Contractor's purchases of tangible personal property that is either incorporated into real property owned by a governmental entity or purchased for and sold to a governmental entity are exempt from sales and use tax. The City shall not pay sales tax for any such tangible personal property that it purchases from the Contractor pursuant to the Contract. With respect to such tangible personal property, the Contractor, at the request of the City, shall furnish to the City such bills of sale and other instruments as may be required by the City, properly executed, acknowledged and delivered assuring to the City title to such tangible personal property, free of liens and/or encumbrances, and the Contractor shall mark or otherwise identify all such tangible personal property as the property of the City.

62.4 Title to all tangible personal property to be sold by the Contractor to the City pursuant to the provisions of the Contract shall immediately vest in and become the sole property of the City upon delivery of such tangible personal property to the Site. Notwithstanding such transfer of title, the Contractor shall have the full and continuing responsibility to install such tangible personal property in accordance with the provisions of this Contract, protect it, maintain it in a proper condition and forthwith repair, replace and make good any damage thereto, theft or disappearance thereof, and furnish additional tangible personal property in place of any that may be lost, stolen or rendered unusable, without cost to the City, until such time as the Work covered by the Contract is fully accepted by the City. Such transfer of title shall in no way affect any of the Contractor's obligations hereunder. In the event that, after title has passed to the City, any of the tangible personal property is rejected as being defective or otherwise unsatisfactory, title to all such tangible personal property shall be deemed to have been transferred back to the Contractor.

62.5 The purchase by Subcontractors or Materialmen of tangible personal property to be sold hereunder shall be a purchase or procurement for resale to the Contractor (either directly or through other Subcontractors) and therefore not subject to the aforesaid sales and compensating use taxes, provided that the subcontracts and purchase agreements provide for the resale of such tangible personal property and that such subcontracts and purchase agreements are in a form similar to this Contract with respect to the separation of the sale of consumable supplies and tangible personal property that the Contractor is required to remove from the Site during or upon completion of the Work from the Work and labor, services, and any other matters to be provided, and provided further that the subcontracts and

purchase agreements provide separate prices for tangible personal property and all other services and matters. Such separation shall actually be followed in practice, including the separation of payments for tangible personal property from the payments for other Work and labor and other things to be provided.

62.6 The Contractor and its Subcontractors and Materialmen shall furnish a Contractor Exempt Purchase Certificate to all persons, firms or corporations from which they purchase tangible personal property for the performance of the Work covered by this Contract.

62.7 In the event any of the provisions of this Article 62 shall be deemed to be in conflict with any other provisions of this Contract or create any ambiguity, then the provisions of this Article 62 shall control.

ARTICLE 63. INVESTIGATION(S) CLAUSE

63.1 The parties to this Contract agree to cooperate fully and faithfully with any investigation, audit or inquiry conducted by a United States, a State of New York (State) or a City governmental agency or authority that is empowered directly or by designation to compel the attendance of witnesses and to examine witnesses under oath, or conducted by the Inspector General of a governmental agency that is a party in interest to the transaction, submitted bid, submitted proposal, contract, lease, permit or license that is the subject of the investigation, audit or inquiry.

63.2 If any person who has been advised that his/her statement, and any information from such statement, will not be used against him/her in any subsequent criminal proceeding refuses to testify before a grand jury or other governmental agency or authority empowered directly or by designation to compel the attendance of witnesses and to examine witnesses under oath concerning the award of or performance under any transaction, agreement, lease, permit, contract, or license entered into with the City, the State, or any political subdivision or public authority thereof, or the Port Authority of New York and New Jersey, or any local development corporation within the City, or any public benefit corporation organized under the Laws of the State of New York, or;

63.3 If any person refuses to testify for a reason other than the assertion of his/her privilege against self incrimination in an investigation, audit or inquiry conducted by a City or State governmental agency or authority empowered directly or by designation to compel the attendance of witnesses and to take testimony under oath, or by the Inspector General of the governmental agency that is a party in interest in, and is seeking testimony concerning the award of, or performance under any transaction, agreement, lease, permit, contract, or license entered into with the City, the State, or any political subdivision thereof or any local development corporation within the City, then;

63.4 The Commissioner whose Agency is a party in interest to the transaction, submitted bid, submitted proposal, contract, lease, permit, or license shall convene a hearing, upon not less than five (5) Days' written notice to the parties involved to determine if any penalties should attach for the failure of a person to testify.

63.5 If any non-governmental party to the hearing requests an adjournment, the Commissioner who convened the hearing may, upon granting the adjournment, suspend any contract, lease, permit, or license, pending the final determination pursuant to Article 63.7 without the City incurring any penalty or damages for delay or otherwise.

63.6 The penalties which may attach after a final determination by the Commissioner may include but shall not exceed:

63.6.1 The disqualification for a period not to exceed five (5) years from the date of an adverse determination for any person, or any entity of which such person was a member at the time the testimony was sought, from submitting bids for, or transacting business with, or entering into or obtaining any contract, lease, permit or license with or from the City; and/or

63.6.2 The cancellation or termination of any and all such existing City contracts, leases, permits or licenses that the refusal to testify concerns and that have not been assigned as permitted under this Contract, nor the proceeds of which pledged, to an unaffiliated and unrelated institutional lender for fair value prior to the issuance of the notice scheduling the hearing, without the City incurring any penalty or damages on account of such cancellation or termination; monies lawfully due for goods delivered, work done, rentals, or fees accrued prior to the cancellation or termination shall be paid by the City.

63.7 The Commissioner shall consider and address in reaching his/her determination and in assessing an appropriate penalty the factors in Articles 63.7.1 and 63.7.2. The Commissioner may also consider, if relevant and appropriate, the criteria established in Articles 63.7.3 and 63.7.4, in addition to any other information which may be relevant and appropriate:

63.7.1 The party's good faith endeavors or lack thereof to cooperate fully and faithfully with any governmental investigation or audit, including but not limited to the discipline, discharge, or disassociation of any person failing to testify, the production of accurate and complete books and records, and the forthcoming testimony of all other members, agents, assignees or fiduciaries whose testimony is sought.

63.7.2 The relationship of the person who refused to testify to any entity that is a party to the hearing, including but not limited to, whether the person whose testimony is sought has an ownership interest in the entity and/or the degree of authority and responsibility the person has within the entity.

63.7.3 The nexus of the testimony sought to the subject entity and its contracts, leases, permits or licenses with the City.

63.7.4 The effect a penalty may have on an unaffiliated and unrelated party or entity that has a significant interest in an entity subject to penalties under Article 63.6, provided that the party or entity has given actual notice to the Commissioner upon the acquisition of the interest, or at the hearing called for in Article 63.4, gives notice and proves that such interest was previously acquired. Under either circumstance the party or entity shall present evidence at the hearing demonstrating the potential adverse impact a penalty will have on such person or entity.

63.8 Definitions:

63.8.1 The term "license" or "permit" as used in this Article 63 shall be defined as a license, permit, franchise or concession not granted as a matter of right.

63.8.2 The term "person" as used in this Article 63 shall be defined as any natural person doing business alone or associated with another person or entity as a partner, director, officer, principal or employee.

63.8.3 The term "entity" as used in this Article 63 shall be defined as any firm, partnership, corporation, association, joint venture, or person that receives monies, benefits, licenses, leases, or permits from or through the City or otherwise transacts business with the City.

63.8.4 The term "member" as used in this Article 63 shall be defined as any person associated with another person or entity as a partner, director, officer, principal or employee.

63.9 In addition to and notwithstanding any other provision of this Contract, the Commissioner may in his/her sole discretion terminate this Contract upon not less than three (3) Days' written notice in the event the Contractor fails to promptly report in writing to the Commissioner of the Department of Investigations ("DOI") of the City any solicitation of money, goods, requests for future employment or other benefit or thing of value, by or on behalf of any employee of the City or other person, firm, corporation or entity for any purpose which may be related to the procurement or obtaining of this Contract by the Contractor, or affecting the performance of this Contract.

ARTICLE 64. TERMINATION BY THE CITY

64.1 In addition to termination pursuant to any other article of this Contract, the Commissioner may, at any time, terminate this Contract by written notice to the Contractor. In the event of termination, the Contractor shall, upon receipt of such notice, unless otherwise directed by the Commissioner:

64.1.1 Stop Work on the date specified in the notice;

64.1.2 Take such action as may be necessary for the protection and preservation of the City's materials and property;

64.1.3 Cancel all cancelable orders for material and equipment;

64.1.4 Assign to the City and deliver to the Site or another location designated by the Commissioner, any non-cancelable orders for material and equipment that is not capable of use except in the performance of this Contract and has been specifically fabricated for the sole purpose of this Contract and not incorporated in the Work;

64.1.5 Take no action which will increase the amounts payable by the City under this Contract.

64.2 In the event of termination by the City pursuant to this Article 64, payment to the Contractor shall be in accordance with Articles 64.2.1, 64.2.2 or 64.2.3, to the extent that each respective article applies.

64.2.1 Lump Sum Contracts or Items: On all lump sum Contracts, or on lump sum items in a Contract, the City will pay the Contractor the sum of the amounts described in Articles 64.2.1(a) and 64.2.1(b), less all payments previously made pursuant to this Contract. On lump sum Contracts only, the City will also pay the Contractor an additional sum as provided in Article 64.2.1(c).

64.2.1(a) For Work completed prior to the notice of termination, the Contractor shall be paid a pro rata portion of the lump sum bid amount, plus approved change orders, based upon the percent completion of the Work, as determined by the Commissioner. For the purpose of determining the pro rata portion of the lump sum bid amount to which the Contractor is entitled, the bid breakdown submitted in accordance with Article 41 shall be considered, but shall not be dispositive. The Commissioner's determination hereunder shall be final, binding, and conclusive.

64.2.1(b) For non-cancelable material and equipment that is not capable of use except in the performance of this Contract and has been specifically fabricated for the sole purpose of this Contract, but not yet incorporated in the Work, the Contractor shall be paid the lesser of the following, less salvage value:

64.2.1(b)(i) The Direct Cost, as defined in Article 64.2.4; or

64.2.1(b)(ii) The fair and reasonable value, if less than Direct Cost, of such material and equipment, plus necessary and reasonable delivery costs.

64.2.1(b)(iii) In addition, the Contractor shall be paid five (5%) percent of the amount described in Article 64.2.1(b)(i) or Article 64.2.1(b)(ii), whichever applies.

64.2.1(c) Except as otherwise provided in Article 64.2.1(d), on all lump sum Contracts, the Contractor shall be paid the percentage indicated below applied to the difference between the total lump sum bid amount and the total of all payments made prior to the notice of termination plus all payments allowed pursuant to Articles 64.2.1(a) and 64.2.1(b):

64.2.1(c)(i) Five (5%) percent of the first five million (\$5,000,000) dollars; and

64.2.1(c)(ii) Three (3%) percent of any amount between five million (\$5,000,000) dollars and fifteen million (\$15,000,000) dollars; plus

64.2.1(c)(iii) One (1%) percent of any amount over fifteen million (\$15,000,000) dollars.

64.2.1(d) In the event the City terminates a lump sum Contract pursuant to this Article 64 within ninety (90) Days after registration of the Contract with the Comptroller, the Contractor shall be paid one (1%) percent of the difference between the lump sum bid amount and the total of all payments made pursuant to this Article 64.2.

64.2.2 Unit Price Contracts or Items: On all unit price Contracts, or on unit price items in a Contract, the City will pay the Contractor the sum of the amounts described in Articles 64.2.2(a) and 64.2.2(b), less all payments previously made pursuant to this Contract:

64.2.2(a) For all completed units, the unit price stated in the Contract, and

64.2.2(b) For units that have been ordered but are only partially completed, the Contractor will be paid:

64.2.2(b)(i) A pro rata portion of the unit price stated in the Contract based upon the percent completion of the unit and

64.2.2(b)(ii) For non-cancelable material and equipment, payment will be made pursuant to Article 64.2.1(b).

64.2.3 Time and Materials Contracts or Items Based on Time and Material Records: On all Contracts or items in a Contract where payment for the Work is based on time and

material records, the Contractor shall be paid in accordance with Article 26, less all payments previously made pursuant to this Contract.

64.2.4 Direct Costs: Direct Costs as used in this Article 64.2 shall mean:

64.2.4(a) The actual purchase price of material and equipment, plus necessary and reasonable delivery costs,

64.2.4(b) The actual cost of labor involved in construction and installation at the Site, and

64.2.4(c) The actual cost of necessary bonds and insurance purchased pursuant to requirements of this Contract less any amounts that have been or should be refunded by the Contractor's sureties or insurance carriers.

64.2.4(d) Direct Costs shall not include overhead.

64.3 In no event shall any payments under this Article 64 exceed the Contract price for such items.

64.4 All payments pursuant to Article 64 shall be in the nature of liquidated damages and shall be accepted by the Contractor in full satisfaction of all claims against the City.

64.5 The City may deduct or set off against any sums due and payable pursuant to this Article 64, any deductions authorized by this Contract or by Law (including but not limited to liquidated damages) and any claims it may have against the Contractor. The City's exercise of the right to terminate the Contract pursuant to this Article 64 shall not impair or otherwise effect the City's right to assert any claims it may have against the Contractor in a plenary action.

64.6 Where the Work covered by the Contract has been substantially completed, as determined in writing by the Commissioner, termination of the Work shall be handled as an omission of Work pursuant to Articles 29 and 33, in which case a change order will be issued to reflect an appropriate reduction in the Contract sum, or if the amount is determined after final payment, such amount shall be paid by the Contractor.

ARTICLE 65. CHOICE OF LAW, CONSENT TO JURISDICTION AND VENUE

65.1 This Contract shall be deemed to be executed in the City regardless of the domicile of the Contractor, and shall be governed by and construed in accordance with the Laws of the State of New York and the Laws of the United States, where applicable.

65.2 The parties agree that any and all claims asserted against the City arising under this Contract or related thereto shall be heard and determined in the courts of the State of New York ("New York State Courts") located in the City and County of New York. To effect this Contract and intent, the Contractor agrees:

65.2.1 If the City initiates any action against the Contractor in Federal court or in a New York State Court, service of process may be made on the Contractor either in person, wherever such Contractor may be found, or by registered mail addressed to the Contractor at its address as set forth in this Contract, or to such other address as the Contractor may provide to the City in writing; and

65.2.2 With respect to any action between the City and the Contractor in a New York State Court, the Contractor hereby expressly waives and relinquishes any rights it might otherwise have:

65.2.2(a) To move to dismiss on grounds of forum non conveniens;

65.2.2(b) To remove to Federal Court; and

65.2.2(c) To move for a change of venue to a New York State Court outside New York County.

65.2.3 With respect to any action brought by the City against the Contractor in a Federal Court located in the City, the Contractor expressly waives and relinquishes any right it might otherwise have to move to transfer the action to a Federal Court outside the City.

65.2.4 If the Contractor commences any action against the City in a court located other than in the City and County of New York, upon request of the City, the Contractor shall either consent to a transfer of the action to a New York State Court of competent jurisdiction located in the City and County of New York or, if the Court where the action is initially brought will not or cannot transfer the action, the Contractor shall consent to dismiss such action without prejudice and may thereafter reinstate the action in a New York State Court of competent jurisdiction in New York County.

65.3 If any provision(s) of this Article 65 is held unenforceable for any reason, each and all other provision(s) shall nevertheless remain in full force and effect.

ARTICLE 66. PARTICIPATION IN AN INTERNATIONAL BOYCOTT

66.1 The Contractor agrees that neither the Contractor nor any substantially owned affiliated company is participating or shall participate in an international boycott in violation of the provisions of the Federal Export Administration Act of 1979, as amended, or the regulations of the United States Department of Commerce (Commerce Department) promulgated thereunder.

66.2 Upon the final determination by the Commerce Department or any other agency of the United States as to, or conviction of the Contractor or a substantially-owned affiliated company thereof for participation in an international boycott in violation of the provisions of the Export Administration Act of 1979, as amended, or the regulations promulgated thereunder, the Comptroller may, at his/her option, render forfeit and void this Contract.

66.3 The Contractor shall comply in all respects, with the provisions of Section 6-114 of the Administrative Code and the rules and regulations issued by the Comptroller thereunder.

ARTICLE 67. LOCALLY BASED ENTERPRISE PROGRAM

67.1 This Contract is subject to the requirements of Section 6-108.1 of the Administrative Code and regulations promulgated thereunder. No construction contract shall be awarded unless and until these requirements have been complied with in their entirety; however, compliance with this Article 67 is not required if the Agency sets Subcontractor Participation Goals for Minority- and Women-Owned Business Enterprises (M/WBEs).

67.2 Unless specifically waived by the Commissioner with the approval of the Division of Economic and Financial Opportunity of the City Department of Business Services, if any portion of the Contract is subcontracted, not less than ten (10%) percent of the total dollar amount of the Contract shall be awarded to locally based enterprises (LBEs); except that where less than ten (10%) percent of the total dollar amount of the Contract is subcontracted, such lesser percentage shall be so awarded.

67.3 The Contractor shall not require performance and payment bonds from LBE Subcontractors.

67.4 If the Contractor has indicated prior to award that no Work will be subcontracted, no Work shall be subcontracted without the prior approval of the Commissioner, which shall be granted only if the Contractor makes a good faith effort beginning at least six (6) weeks before the Work is to be performed to obtain LBE Subcontractors to perform the Work.

67.5 If the Contractor has not identified sufficient LBE Subcontractors prior to award, it shall sign a letter of compliance stating that it complies with Section 6-108.1 of the Administrative Code, recognizes that achieving the LBE requirement is a condition of its Contract, and shall submit documentation demonstrating its good faith efforts to obtain LBEs. After award, the Contractor shall begin to solicit LBE's to perform subcontracted Work at least six (6) weeks before the date such Work is to be performed and shall demonstrate that a good faith effort has been made to obtain LBEs on each subcontract until it meets the required percentage.

67.6 Failure of the Contractor to comply with the requirements of Section 6-108.1 of the Administrative Code and the regulations promulgated thereunder shall constitute a material breach of this Contract. Remedy for such breach may include the imposition of any or all of the following sanctions:

67.6.1 Reducing the Contractor's compensation by an amount equal to the dollar value of the percentage of the LBE subcontracting requirement not complied with;

67.6.2 Declaring the Contractor in default;

67.6.3 If the Contractor is an LBE, de-certifying and declaring the Contractor ineligible to participate in the LBE program for a period of up to three (3) years.

ARTICLE 68. ANTITRUST

68.1 The Contractor hereby assigns, sells, and transfers to the City all right, title, and interest in and to any claims and causes of action arising under the antitrust Laws of New York State or of the United States relating to the particular goods or services purchased or procured by the City under this Contract.

ARTICLE 69. MacBRIDE PRINCIPLES PROVISIONS

69.1 Notice To All Prospective Contractors:

69.1.1 Local Law No. 34 of 1991 became effective on September 10, 1991 and added Section 6-115.1 of the Administrative Code. The local Law provides for certain restrictions on City Contracts to express the opposition of the people of the City to employment discrimination practices in Northern Ireland to promote freedom of work-place opportunity.

69.1.2 Pursuant to Section 6-115.1, prospective Contractors for Contracts to provide goods or services involving an expenditure of an amount greater than ten thousand

(\$10,000.) dollars, or for construction involving an amount greater than fifteen thousand (\$15,000.) dollars, are asked to sign a rider in which they covenant and represent, as a material condition of their Contract, that any business operations in Northern Ireland conducted by the Contractor and any individual or legal entity in which the Contractor holds a ten (10%) percent or greater ownership interest in the Contractor will be conducted in accordance with the MacBride Principles of nondiscrimination in employment.

69.1.3 Prospective Contractors are not required to agree to these conditions. However, in the case of Contracts let by competitive sealed bidding, whenever the lowest responsible bidder has not agreed to stipulate to the conditions set forth in this notice and another bidder who has agreed to stipulate to such conditions has submitted a bid within five (5%) percent of the lowest responsible bid for a Contract to supply goods, services or construction of comparable quality, the Agency shall refer such bids to the Mayor, the Speaker or other officials, as appropriate, who may determine, in accordance with applicable Law, that it is in the best interest of the City that the Contract be awarded to other than the lowest responsible pursuant to Section 313(b)(2) of the City Charter.

69.1.4 In the case of Contracts let by other than competitive sealed bidding, if a prospective Contractor does not agree to these conditions, no Agency, elected official or the City Council shall award the Contract to that bidder unless the Agency seeking to use the goods, services or construction certifies in writing that the Contract is necessary for the Agency to perform its functions and there is no other responsible Contractor who will supply goods, services or construction of comparable quality at a comparable price.

69.2 In accordance with Section 6-115.1 of the Administrative Code, the Contractor stipulates that such Contractor and any individual or legal entity in which the Contractor holds a ten (10%) percent or greater ownership interest in the Contractor either:

69.2.1 Have no business operations in Northern Ireland, or

69.2.2 Shall take lawful steps in good faith to conduct any business operations they have in Northern Ireland in accordance with the MacBride Principles, and shall permit independent monitoring of their compliance with such principles.

69.3 For purposes of this Article, the following terms shall have the following meanings:

69.3.1 "MacBride Principles" shall mean those principles relating to nondiscrimination in employment and freedom of work-place opportunity which require employers doing business in Northern Ireland to:

69.3.1(a) increase the representation of individuals from under-represented religious groups in the workforce, including managerial, supervisory, administrative, clerical and technical jobs;

69.3.1(b) take steps to promote adequate security for the protection of employees from under-represented religious groups both at the work-place and while traveling to and from Work;

69.3.1(c) ban provocative religious or political emblems from the workplace;

69.3.1(d) publicly advertise all job openings and make special recruitment efforts to attract applicants from under-represented religious groups;

69.3.1(e) establish layoff, recall, and termination procedures which do not in practice favor a particular religious group;

69.3.1(f) abolish all job reservations, apprenticeship restrictions and different employment criteria which discriminate on the basis of religion;

69.3.1(g) develop training programs that will prepare substantial numbers of current employees from under-represented religious groups for skilled jobs, including the expansion of existing programs and the creation of new programs to train, upgrade, and improve the skills of workers from under-represented religious groups;

69.3.1(h) establish procedures to assess, identify, and actively recruit employees from under-represented religious groups with potential for further advancement; and

69.3.1(i) appoint a senior management staff member to oversee affirmative action efforts and develop a timetable to ensure their full implementation.

69.4 The Contractor agrees that the covenants and representations in Article 69.2 are material conditions to this Contract. In the event the Agency receives information that the Contractor who made the stipulation required by this Article 69 is in violation thereof, the Agency shall review such information and give the Contractor an opportunity to respond. If the Agency finds that a violation has occurred, the Agency shall have the right to declare the Contractor in default and/or terminate this Contract for cause and procure supplies, services or Work from another source in the manner the Agency deems proper. In the event of such termination, the Contractor shall pay to the Agency, or the Agency in its sole discretion may withhold from any amounts otherwise payable to the Contractor, the difference between the Contract price for the uncompleted portion of this Contract and the cost to the Agency of completing performance of this Contract either itself or by engaging another Contractor or Contractors. In the case of a requirement Contract, the Contractor shall be liable for such difference in price for the entire amount of supplies required by the Agency for the uncompleted term of Contractor's Contract. In the case of a construction Contract, the Agency shall also have the right to hold the Contractor in partial or total default in accordance with the default provisions of this Contract, and/or may seek debarment or suspension of the Contractor. The rights and remedies of the Agency hereunder shall be in addition to, and not in lieu of, any rights and remedies the Agency has pursuant to this Contract or by operation of Law.

ARTICLE 70. ELECTRONIC FILING/NYC DEVELOPMENT HUB

70.1 The Contractor shall electronically file all alteration type-2 and alteration type-3 applications via the New York City Development Hub Web site, except applications for the following types of minor alterations: enlargements, curb cuts, legalizations, fire alarms, builders pavement plans, and jobs filed on Landmark Preservation Commission calendared properties. All such filings must be professionally certified. Information about electronic filing via the New York City Development Hub is available on the City Department of Buildings Web site at www.nyc.gov/buildings.

ARTICLE 71. PROHIBITION OF TROPICAL HARDWOODS

71.1 Tropical hardwoods, as defined in Section 165 of the New York State Finance Law (Finance Law), shall not be utilized in the performance of this Contract except as expressly permitted by Section 165 of the Finance Law.

ARTICLE 72. CONFLICTS OF INTEREST

72.1 Section 2604 of the City Charter and other related provisions of the City Charter, the Administrative Code, and the Penal Law are applicable under the terms of this Contract in relation to conflicts of interest and shall be extended to Subcontractors authorized to perform Work, labor and services pursuant to this Contract and further, it shall be the duty and responsibility of the Contractor to so inform its respective Subcontractors. Notice is hereby given that, under certain circumstances, penalties may be invoked against the donor as well as the recipient of any form of valuable gift.

ARTICLE 73. MERGER CLAUSE

73.1 The written Contract herein, contains all the terms and conditions agreed upon by the parties hereto, and no other agreement, oral or otherwise, regarding the subject matter of this Contract shall be deemed to exist or to bind any of the parties hereto, or to vary any of the terms contained herein.

ARTICLE 74. STATEMENT OF WORK

74.1 The Contractor shall furnish all labor and materials and perform all Work in strict accordance with the Specifications and Addenda thereto, numbered JW-5.

ARTICLE 75. COMPENSATION TO BE PAID TO CONTRACTOR

75.1 The City will pay and the Contractor will accept in full consideration for the performance of the Contract, subject to additions and deductions as provided herein, the total sum of: Two million nine hundred Dollars, (\$ 2,949,964.00), this said sum being the amount at which the Contract was awarded to the Contractor at a public letting thereof, based upon the Contractor's bid for the Contract. forty nine thousand nine hundred sixty four

ARTICLE 76. ELECTRONIC FUNDS TRANSFER

76.1 In accordance with Section 6-107.1 of the Administrative Code, the Contractor agrees to accept payments under this Contract from the City by electronic funds transfer (EFT). An EFT is any transfer of funds, other than a transaction originated by check, draft or similar paper instrument, which is initiated through an electronic terminal, telephonic instrument or computer or magnetic tape so as to order, instruct or authorize a financial institution to debit or credit an account. Prior to the first payment made under this Contract, the Contractor shall designate one financial institution or other authorized payment agent and shall complete the attached "EFT Vendor Payment Enrollment Form" in order to provide the Commissioner of the City Department of Finance with information necessary for the Contractor to receive electronic funds transfer payments through a designated financial institution or authorized payment agent. The crediting of the amount of a payment to the appropriate account on the books of a financial institution or other authorized payment agent designated by the Contractor shall constitute full satisfaction by the City for the amount of the payment under this Contract. The account information supplied by the Contractor to facilitate the electronic funds transfer shall remain confidential to the fullest extent provided by Law.

76.2 The Commissioner may waive the application of the requirements of this Article 76 to payments on contracts entered into pursuant to Section 315 of the City Charter. In addition, the Commissioner of the Department of Finance and the Comptroller may jointly issue standards pursuant to

which the Agency may waive the requirements of this Article 76 for payments in the following circumstances: (i) for individuals or classes of individuals for whom compliance imposes a hardship; (ii) for classifications of types of checks; or (iii) in other circumstances as may be necessary in the interest of the City.

ARTICLE 77. RECORDS RETENTION

77.1 The Contractor agrees to retain all books, records, and other documents relevant to this Contract for six years after the final payment or termination of this Contract, whichever is later. City, state, and federal auditors and any other persons duly authorized by the City shall have full access to and the right to examine any such books, records, and other documents during the retention period.

ARTICLE 78. PARTICIPATION BY MINORITY-OWNED AND WOMEN-OWNED BUSINESS ENTERPRISES IN CITY PROCUREMENT

NOTICE TO ALL PROSPECTIVE CONTRACTORS

ARTICLE I. M/WBE PROGRAM

Local Law No. 129 of 2005 added and Local Law 1 of 2013 amended Section 6-129 of the Administrative Code of the City of New York (hereinafter "Section 6-129"). Section 6-129 establishes the program for participation in City procurement ("M/WBE Program") by minority-owned business enterprises ("MBEs") and women-owned business enterprises ("WBEs"), certified in accordance with Section 1304 of the New York City Charter. As stated in Section 6-129, the intent of the program is to address the impact of discrimination on the City's procurement process, and to promote the public interest in avoiding fraud and favoritism in the procurement process, increasing competition for City business, and lowering contract costs. The contract provisions contained herein are pursuant to Section 6-129, and the rules of the Department of Small Business Services ("DSBS") promulgated thereunder.

If this Contract is subject to the M/WBE Program established by Section 6-129, the specific requirements of MBE and/or WBE participation for this Contract are set forth in Schedule B of the Contract (entitled the "M/WBE Utilization Plan"), and are detailed below. The Contractor must comply with all applicable MBE and WBE requirements for this Contract.

All provisions of Section 6-129 are hereby incorporated in the Contract by reference and all terms used herein that are not defined herein shall have the meanings given such terms in Section 6-129. Article I, Part A, below, sets forth provisions related to the participation goals for construction, standard and professional services contracts. Article I, Part B, below, sets forth miscellaneous provisions related to the M/WBE Program.

PART A

PARTICIPATION GOALS FOR CONSTRUCTION, STANDARD AND PROFESSIONAL SERVICES CONTRACTS OR TASK ORDERS

1. The MBE and/or WBE Participation Goals established for this Contract or Task Orders issued pursuant to this Contract, ("Participation Goals"), as applicable, are set forth on Schedule B, Part I to this Contract (see Page I, line 1 Total Participation Goals) or will be set forth on Schedule B, Part I to Task Orders issued pursuant to this Contract, as applicable.

The Participation Goals represent a percentage of the total dollar value of the Contract or Task Order, as applicable, that may be achieved by awarding subcontracts to firms certified with New York City Department of Small Business Services as MBEs and/or WBEs, and/or by crediting the participation of prime contractors and/or qualified joint ventures as provided in Section 3 below, unless the goals have been waived or modified by Agency in accordance with Section 6-129 and Part A, Sections 10 and 11 below, respectively.

2. If Participation Goals have been established for this Contract or Task Orders issued pursuant to this Contract, Contractor agrees or shall agree as a material term of the Contract that Contractor shall be subject to the Participation

Goals, unless the goals are waived or modified by Agency in accordance with Section 6-129 and Part A, Sections 10 and 11 below, respectively.

3. If Participation Goals have been established for this Contract or Task Order issued pursuant to this Contract, a Contractor that is an MBE and/or WBE shall be permitted to count its own participation toward fulfillment of the relevant Participation Goal, provided that in accordance with Section 6-129 the value of Contractor's participation shall be determined by subtracting from the total value of the Contract or Task Order, as applicable, any amounts that the Contractor pays to direct subcontractors (as defined in Section 6-129(c)(13)), and provided further that a Contractor that is certified as both an MBE and a WBE may count its own participation either toward the goal for MBEs or the goal for WBEs, but not both.

A Contractor that is a qualified joint venture (as defined in Section 6-129(c)(30)) shall be permitted to count a percentage of its own participation toward fulfillment of the relevant Participation Goal. In accordance with Section 6-129, the value of Contractor's participation shall be determined by subtracting from the total value of the Contract or Task Order, as applicable, any amounts that Contractor pays to direct subcontractors, and then multiplying the remainder by the percentage to be applied to total profit to determine the amount to which an MBE or WBE is entitled pursuant to the joint venture agreement, provided that where a participant in a joint venture is certified as both an MBE and a WBE, such amount shall be counted either toward the goal for MBEs or the goal for WBEs, but not both.

4. A. If Participation Goals have been established for this Contract, a prospective contractor shall be required to submit with its bid or proposal, as applicable, a completed Schedule B, M/WBE Utilization Plan, Part II (see Pages 2-4) indicating: (a) whether the contractor is an MBE or WBE, or qualified joint venture; (b) the percentage of work it intends to award to direct subcontractors; and (c) in cases where the contractor intends to award direct subcontracts, a description of the type and dollar value of work designated for participation by MBEs and/or WBEs, and the time frames in which such work is scheduled to begin and end. In the event that this M/WBE Utilization Plan indicates that the bidder or proposer, as applicable, does not intend to meet the Participation Goals, the bid or proposal, as applicable, shall be deemed non-responsive, unless Agency has granted the bidder or proposer, as applicable, a pre-award waiver of the Participation Goals in accordance with Section 6-129 and Part A, Section 10 below.

B. (i) If this Contract is for a master services agreement or other requirements-type contract that will result in the issuance of Task Orders that will be individually registered ("Master Services Agreement") and is subject to M/WBE Participation Goals, a prospective contractor shall be required to submit with its bid or proposal, as applicable, a completed Schedule B, M/WBE Participation Requirements for Master Services Agreements That Will Require Individually Registered Task Orders, Part II (page 2) indicating the prospective contractor's certification and required affirmations to make all reasonable good faith efforts to meet participation goals established on each individual Task Order issued pursuant to this Contract, or if a partial waiver is obtained or such goals are modified by the Agency, to meet the modified Participation Goals by soliciting and obtaining the participation of certified MBE and/or WBE firms. In the event that the Schedule B indicates that the bidder or proposer, as applicable, does not intend to meet the Participation Goals that may be established on Task Orders issued pursuant to this Contract, the bid or proposal, as applicable, shall be deemed nonresponsive.

(ii) Participation Goals on a Master Services Agreement will be established for individual Task Orders issued after the Master Services Agreement is awarded. If Participation Goals have been established on a Task Order, a contractor shall be required to submit a Schedule B - M/WBE Utilization Plan For Independently Registered Task Orders That Are Issued Pursuant to Master Services Agreements, Part II (see Pages 2-4) indicating: (a) whether the contractor is an MBE or WBE, or qualified joint venture; (b) the percentage of work it intends to award to direct subcontractors; and (c) in cases where the contractor intends to award direct subcontracts, a description of the type and dollar value of work designated for participation by MBEs and/or WBEs, and the time frames in which such work is scheduled to begin and end. The contractor must engage in good faith efforts to meet the Participation Goals as established for the Task Order unless Agency has granted the contractor a pre-award waiver of the Participation Goals in accordance with Section 6-129 and Part A, Section 10 below.

C. THE BIDDER/PROPOSER MUST COMPLETE THE SCHEDULE B INCLUDED HEREIN (SCHEDULE B, PART II). A SCHEDULE B SUBMITTED BY THE BIDDER/PROPOSER WHICH DOES NOT INCLUDE THE VENDOR CERTIFICATION AND REQUIRED AFFIRMATIONS (SEE SECTION V OF PART II) WILL BE DEEMED TO BE NON-RESPONSIVE, UNLESS A FULL WAIVER OF THE PARTICIPATION GOALS IS GRANTED (SCHEDULE B, PART III). IN THE EVENT THAT THE CITY DETERMINES THAT THE BIDDER/PROPOSER HAS SUBMITTED A SCHEDULE B WHERE THE VENDOR CERTIFICATION AND REQUIRED AFFIRMATIONS ARE COMPLETED BUT OTHER

ASPECTS OF THE SCHEDULE B ARE NOT COMPLETE, OR CONTAIN A COPY OR COMPUTATION ERROR THAT IS AT ODDS WITH THE VENDOR CERTIFICATION AND AFFIRMATIONS, THE BIDDER/PROPOSER WILL BE NOTIFIED BY THE AGENCY AND WILL BE GIVEN FOUR (4) CALENDAR DAYS FROM RECEIPT OF NOTIFICATION TO CURE THE SPECIFIED DEFICIENCIES AND RETURN A COMPLETED SCHEDULE B TO THE AGENCY. FAILURE TO DO SO WILL RESULT IN A DETERMINATION THAT THE BID/PROPOSAL IS NON-RESPONSIVE. RECEIPT OF NOTIFICATION IS DEFINED AS THE DATE NOTICE IS E-MAILED OR FAXED (IF THE BIDDER/PROPOSER HAS PROVIDED AN E-MAIL ADDRESS OR FAX NUMBER), OR NO LATER THAN FIVE (5) CALENDAR DAYS FROM THE DATE OF MAILING OR UPON DELIVERY, IF DELIVERED.

5. Where an M/WBE Utilization Plan has been submitted, the Contractor shall, within 30 days of issuance by Agency of a notice to proceed, submit a list of proposed persons or entities to which it intends to award subcontracts within the subsequent 12 months. In the case of multiyear contracts, such list shall also be submitted every year thereafter. The Agency may also require the Contractor to report periodically about the contracts awarded by its direct subcontractors to indirect subcontractors (as defined in Section 6-129(c)(22)). PLEASE NOTE: If this Contract is a public works project subject to GML §101(5) (i.e., a contract valued at or below \$3M for projects in New York City) or if the Contract is subject to a project labor agreement in accordance with Labor Law §222, and the bidder is required to identify at the time of bid submission its intended subcontractors for the Wicks trades (plumbing and gas fitting; steam heating, hot water heating, ventilating and air conditioning (HVAC); and electric wiring), the Contractor must identify all those to which it intends to award construction subcontracts for any portion of the Wicks trade work at the time of bid submission, regardless of what point in the life of the contract such subcontracts will occur. In identifying intended subcontractors in the bid submission, bidders may satisfy any Participation Goals established for this Contract by proposing one or more subcontractors that are MBEs and/or WBEs for any portion of the Wicks trade work. In the event that the Contractor's selection of a subcontractor is disapproved, the Contractor shall have a reasonable time to propose alternate subcontractors.

6. MBE and WBE firms must be certified by DSBS in order for the Contractor to credit such firms' participation toward the attainment of the Participation Goals. Such certification must occur prior to the firms' commencement of work. A list of MBE and WBE firms may be obtained from the DSBS website at www.nyc.gov/buycertified, by emailing DSBS at buyer@sbs.nyc.gov, by calling (212) 513-6356, or by visiting or writing DSBS at 110 William St., New York, New York, 10038, 7th floor. Eligible firms that have not yet been certified may contact DSBS in order to seek certification by visiting www.nyc.gov/getcertified, emailing MWBE@sbs.nyc.gov, or calling the DSBS certification helpline at (212) 513-6311. A firm that is certified as both an MBE and a WBE may be counted either toward the goal for MBEs or the goal for WBEs, but not both. No credit shall be given for participation by a graduate MBE or graduate WBE, as defined in Section 6-129(c)(20).

7. Where an M/WBE Utilization Plan has been submitted, the Contractor shall, with each voucher for payment, and/or periodically as Agency may require, submit statements, certified under penalty of perjury, which shall include, but not be limited to, the total amount the Contractor paid to its direct subcontractors, and, where applicable pursuant to Section 6-129(j), the total amount direct subcontractors paid to indirect subcontractors; the names, addresses and contact numbers of each MBE or WBE hired as a subcontractor by the Contractor, and, where applicable, hired by any of the Contractor's direct subcontractors; and the dates and amounts paid to each MBE or WBE. The Contractor shall also submit, along with its voucher for final payment, the total amount it paid to subcontractors, and, where applicable pursuant to Section 6-129(j), the total amount its direct subcontractors paid directly to their indirect subcontractors; and a final list, certified under penalty of perjury, which shall include the name, address and contact information of each subcontractor that is an MBE or WBE, the work performed by, and the dates and amounts paid to each.

8. If payments made to, or work performed by, MBEs or WBEs are less than the amount specified in the Contractor's M/WBE Utilization Plan, Agency shall take appropriate action, in accordance with Section 6-129 and Article II below, unless the Contractor has obtained a modification of its M/WBE Utilization Plan in accordance with Section 6-129 and Part A, Section 11 below.

9. Where an M/WBE Utilization Plan has been submitted, and the Contractor requests a change order the value of which exceeds the greater of 10 percent of the Contract or Task Order, as applicable, or \$500,000, Agency shall review the scope of work for the Contract or Task Order, as applicable, and the scale and types of work involved in the change order, and determine whether the Participation Goals should be modified.

10. Pre-award waiver of the Participation Goals. (a) A bidder or proposer, or contractor with respect to a Task Order, may seek a pre-award full or partial waiver of the Participation Goals in accordance with Section 6-129, which

requests that Agency change one or more Participation Goals on the grounds that the Participation Goals are unreasonable in light of the availability of certified firms to perform the services required, or by demonstrating that it has legitimate business reasons for proposing a lower level of subcontracting in its M/WBE Utilization Plan.

(b) To apply for a full or partial waiver of the Participation Goals, a bidder, proposer, or contractor, as applicable, must complete Part III (Page 5) of Schedule B and submit such request no later than seven (7) calendar days prior to the date and time the bids, proposals, or Task Orders are due, in writing to the Agency by email at poped@ddc.nyc.gov or via facsimile at (718) 391-1886. Bidders, proposers, or contractors, as applicable, who have submitted requests will receive an Agency response by no later than two (2) calendar days prior to the due date for bids, proposals, or Task Orders; provided, however, that if that date would fall on a weekend or holiday, an Agency response will be provided by close-of-business on the business day before such weekend or holiday date.

(c) If the Agency determines that the Participation Goals are unreasonable in light of the availability of certified firms to perform the services required, it shall revise the solicitation and extend the deadline for bids and proposals, or revise the Task Order, as applicable.

(d) Agency may grant a full or partial waiver of the Participation Goals to a bidder, proposer or contractor, as applicable, who demonstrates—before submission of the bid, proposal or Task Order, as applicable—that it has legitimate business reasons for proposing the level of subcontracting in its M/WBE Utilization Plan. In making its determination, Agency shall consider factors that shall include, but not be limited to, whether the bidder, proposer or contractor, as applicable, has the capacity and the bona fide intention to perform the Contract without any subcontracting, or to perform the Contract without awarding the amount of subcontracts represented by the Participation Goals. In making such determination, Agency may consider whether the M/WBE Utilization Plan is consistent with past subcontracting practices of the bidder, proposer or contractor, as applicable, whether the bidder, proposer or contractor, as applicable, has made efforts to form a joint venture with a certified firm, and whether the bidder, proposer, or contractor, as applicable, has made good faith efforts to identify other portions of the Contract that it intends to subcontract.

11. **Modification of M/WBE Utilization Plan.** (a) A Contractor may request a modification of its M/WBE Utilization Plan after award of this Contract. **PLEASE NOTE:** If this Contract is a public works project subject to GML §101(5) (i.e., a contract valued at or below \$3M for projects in New York City) or if the Contract is subject to a project labor agreement in accordance with Labor Law §222, and the bidder is required to identify at the time of bid submission its intended subcontractors for the Wicks trades (plumbing and gas fitting; steam heating, hot water heating, ventilating and air conditioning (HVAC); and electric wiring), the Contractor may request a Modification of its M/WBE Utilization Plan as part of its bid submission. The Agency may grant a request for Modification of a Contractor's M/WBE Utilization Plan if it determines that the Contractor has established, with appropriate documentary and other evidence, that it made reasonable, good faith efforts to meet the Participation Goals. In making such determination, Agency shall consider evidence of the following efforts, as applicable, along with any other relevant factors:

- (i) The Contractor advertised opportunities to participate in the Contract, where appropriate, in general circulation media, trade and professional association publications and small business media, and publications of minority and women's business organizations;
- (ii) The Contractor provided notice of specific opportunities to participate in the Contract, in a timely manner, to minority and women's business organizations;
- (iii) The Contractor sent written notices, by certified mail or facsimile, in a timely manner, to advise MBEs or WBEs that their interest in the Contract was solicited;
- (iv) The Contractor made efforts to identify portions of the work that could be substituted for portions originally designated for participation by MBEs and/or WBEs in the M/WBE Utilization Plan, and for which the Contractor claims an inability to retain MBEs or WBEs;
- (v) The Contractor held meetings with MBEs and/or WBEs prior to the date their bids or proposals were due, for the purpose of explaining in detail the scope and requirements of the work for which their bids or proposals were solicited;
- (vi) The Contractor made efforts to negotiate with MBEs and/or WBEs as relevant to perform specific subcontracts, or act as suppliers or service providers;
- (vii) Timely written requests for assistance made by the Contractor to Agency's M/WBE liaison officer and to DSBS;

(viii) Description of how recommendations made by DSBS and Agency were acted upon and an explanation of why action upon such recommendations did not lead to the desired level of participation of MBEs and/or WBEs.

Agency's M/WBE officer shall provide written notice to the Contractor of the determination.

(b) The Agency may modify the Participation Goals when the scope of the work has been changed by the Agency in a manner that affects the scale and types of work that the Contractor indicated in its M/WBE Utilization Plan would be awarded to subcontractors.

12. If this Contract is for an indefinite quantity of construction, standard or professional services or is a requirements type contract and the Contractor has submitted an M/WBE Utilization Plan and has committed to subcontract work to MBEs and/or WBEs in order to meet the Participation Goals, the Contractor will not be deemed in violation of the M/WBE Program requirements for this Contract with regard to any work which was intended to be subcontracted to an MBE and/or WBE to the extent that the Agency has determined that such work is not needed.

13. If Participation Goals have been established for this Contract or a Task Order issued pursuant to this Contract, at least once annually during the term of the Contract or Task Order, as applicable, Agency shall review the Contractor's progress toward attainment of its M/WBE Utilization Plan, including but not limited to, by reviewing the percentage of work the Contractor has actually awarded to MBE and/or WBE subcontractors and the payments the Contractor made to such subcontractors.

14. If Participation Goals have been established for this Contract or a Task Order issued pursuant to this Contract, Agency shall evaluate and assess the Contractor's performance in meeting those goals, and such evaluation and assessment shall become part of the Contractor's overall contract performance evaluation.

PART B: MISCELLANEOUS

1. The Contractor shall take notice that, if this solicitation requires the establishment of an M/WBE Utilization Plan, the resulting contract may be audited by DSBS to determine compliance with Section 6-129. See §6-129(e)(10). Furthermore, such resulting contract may also be examined by the City's Comptroller to assess compliance with the M/WBE Utilization Plan.

2. Pursuant to DSBS rules, construction contracts that include a requirement for an M/WBE Utilization Plan shall not be subject to the law governing Locally Based Enterprises set forth in Section 6-108.1 of the Administrative Code of the City of New York.

3. DSBS is available to assist contractors and potential contractors in determining the availability of MBEs and/or WBEs to participate as subcontractors, and in identifying opportunities that are appropriate for participation by MBEs and/or WBEs in contracts.

4. Prospective contractors are encouraged to enter into qualified joint venture agreements with MBEs and/or WBEs as defined by Section 6-129(c)(30).

5. By submitting a bid or proposal the Contractor hereby acknowledges its understanding of the M/WBE Program requirements set forth herein and the pertinent provisions of Section 6-129, and any rules promulgated thereunder, and if awarded this Contract, the Contractor hereby agrees to comply with the M/WBE Program requirements of this Contract and pertinent provisions of Section 6-129, and any rules promulgated thereunder, all of which shall be deemed to be material terms of this Contract. The Contractor hereby agrees to make all reasonable, good faith efforts to solicit and obtain the participation of MBEs and/or WBEs to meet the required Participation Goals.

ARTICLE II. ENFORCEMENT

1. If Agency determines that a bidder or proposer, as applicable, has, in relation to this procurement, violated Section 6-129 or the DSBS rules promulgated pursuant to Section 6-129, Agency may disqualify such bidder or proposer, as applicable, from competing for this Contract and the Agency may revoke such bidder's or proposer's prequalification status, if applicable.

2. Whenever Agency believes that the Contractor or a subcontractor is not in compliance with Section 6-129 or the DSBS rules promulgated pursuant to Section 6-129, or any provision of this Contract that implements Section 6-129, including, but not limited to any M/WBE Utilization Plan, Agency shall send a written notice to the Contractor describing the alleged noncompliance and offering the Contractor an opportunity to be heard. Agency shall then conduct an investigation to determine whether such Contractor or subcontractor is in compliance.

3. In the event that the Contractor has been found to have violated Section 6-129, the DSBS rules promulgated pursuant to Section 6-129, or any provision of this Contract that implements Section 6-129, including, but not limited to, any M/WBE Utilization Plan, Agency may determine that one of the following actions should be taken:

- (a) entering into an agreement with the Contractor allowing the Contractor to cure the violation;
- (b) revoking the Contractor's pre-qualification to bid or make proposals for future contracts;
- (c) making a finding that the Contractor is in default of the Contract;
- (d) terminating the Contract;
- (e) declaring the Contractor to be in breach of Contract;
- (f) withholding payment or reimbursement;
- (g) determining not to renew the Contract;
- (h) assessing actual and consequential damages;
- (i) assessing liquidated damages or reducing fees, provided that liquidated damages may be based on amounts representing costs of delays in carrying out the purposes of the M/WBE Program, or in meeting the purposes of the Contract, the costs of meeting utilization goals through additional procurements, the administrative costs of investigation and enforcement, or other factors set forth in the Contract;
- (j) exercising rights under the Contract to procure goods, services or construction from another contractor and charge the cost of such contract to the Contractor that has been found to be in noncompliance; or
- (k) taking any other appropriate remedy.

4. If an M/WBE Utilization Plan has been submitted, and pursuant to this Article II, Section 3, the Contractor has been found to have failed to fulfill its Participation Goals contained in its M/WBE Utilization Plan or the Participation Goals as modified by Agency pursuant to Article I, Part A, Section 11, Agency may assess liquidated damages in the amount of ten percent (10%) of the difference between the dollar amount of work required to be awarded to MBE and/or WBE firms to meet the Participation Goals and the dollar amount the Contractor actually awarded and paid, and/or credited, to MBE and/or WBE firms. In view of the difficulty of accurately ascertaining the loss which the City will suffer by reason of Contractor's failure to meet the Participation Goals, the foregoing amount is hereby fixed and agreed as the liquidated damages that the City will suffer by reason of such failure, and not as a penalty. Agency may deduct and retain out of any monies which may become due under this Contract the amount of any such liquidated damages; and in case the amount which may become due under this Contract shall be less than the amount of liquidated damages suffered by the City, the Contractor shall be liable to pay the difference.

5. Whenever Agency has reason to believe that an MBE and/or WBE is not qualified for certification, or is participating in a contract in a manner that does not serve a commercially useful function (as defined in Section 6-129(e)(8)), or has violated any provision of Section 6-129, Agency shall notify the Commissioner of DSBS who shall determine whether the certification of such business enterprise should be revoked.

6. Statements made in any instrument submitted to Agency pursuant to Section 6-129 shall be submitted under penalty of perjury and any false or misleading statement or omission shall be grounds for the application of any applicable criminal and/or civil penalties for perjury. The making of a false or fraudulent statement by an MBE and/or WBE in any instrument submitted pursuant to Section 6-129 shall, in addition, be grounds for revocation of its certification.

7. The Contractor's record in implementing its M/WBE Utilization Plan shall be a factor in the evaluation of its performance. Whenever Agency determines that a Contractor's compliance with an M/WBE Utilization Plan has been unsatisfactory, Agency shall, after consultation with the City Chief Procurement Officer, file an advice of caution form for inclusion in VENDEX as caution data.

IN WITNESS WHEREOF, the Commissioner, on behalf of the City of New York, and the Contractor, have executed this agreement in quadruplicate, two parts of which are to remain with the Commissioner, another to be filed with the Comptroller of the City, and the fourth to be delivered to the Contractor.

THE CITY OF NEW YORK

By: [Signature]
Associate Commissioner

CONTRACTOR: A. A. Coon Construction Inc

By: [Signature]
(Member of Firm or Officer of Corporation)

Title: President

(Where Contractor is a Corporation, add):
Attest:

Secretary

(Seal)

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of New York County of Queens ss:

On this 30 day of June 2016, before me personally came MELVYN FRANK to me known, who, being by me duly sworn did depose and say that he resides at 134-23 81ST AVE ROSELAND NY 11422 that he is the PRESIDENT of the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.

VICTORIA AYO-VAUGHAN
Notary Public, State of New York
Registration #01AY5014042
Qualified in Queens County
Commission Expires July 15, 2019
[Signature]
Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

State of _____ County of _____ ss:

On this _____ day of _____, before me personally appeared _____ to me known, and known to me to be one of the members of the firm of _____ described in and who executed the foregoing instrument; and he acknowledged to me that he executed the same as and for the act and deed of said firm.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____ County of _____ ss:

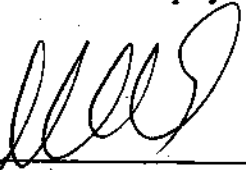
On this _____ day of _____, before me personally appeared _____ to me known, and known to me to be the person described in and who executed the foregoing instrument; and acknowledged that he executed the same.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT BY COMMISSIONER

State of New York County of Queens ss:

On this 30th day of July 2016 before me personally came Christine Flaherty to me known, and known to be the Deputy Commissioner of the Department of Design and Construction of The City of New York, the person described as such in and who as such executed the foregoing instrument and he acknowledged to me that he executed the same as Deputy Commissioner for the purposes therein mentioned.



Notary Public or Commissioner of Deeds

VICTORIA AYO-VAUGHAN
Notary Public, State of New York
Registration #01AY5014042
Qualified in Queens County
Commission Expires July 15, 2019

AUTHORITY

MAYOR'S CERTIFICATE NO. CBX
BUDGET DIRECTOR'S CERTIFICATE NO.

DATED
DATED

APPROPRIATION
COMMISSIONER'S CERTIFICATE

In conformity with the provisions of Section 6-101 of the Administrative Code of the City of New York, it is hereby certified that the estimated cost of the work, materials and supplies required by the within Contract, amounting to

*Two million Nine Hundred Forty
Nine Thousand Nine Hundred SIXTY FOUR*

Dollars (\$ 2,949,964.00)

is chargeable to the fund of the Department of Design and Construction entitled Code

Department of Design and Construction

I hereby certify that the specifications contained herein comply with the terms and conditions of the BUDGET.

Chris Kelly
Associate Commissioner

COMPTROLLER'S CERTIFICATE

The City of New York _____

Pursuant to the provisions of Section 6-101 of the Administrative Code of the City of New York, I hereby certify that there remains unapplied and unexpended a balance of the above mentioned fund applicable to this Contract sufficient to pay the estimated expense of executing the same viz:

\$ _____

Comptroller

**MAYOR'S CERTIFICATE OR
CERTIFICATE OF THE DIRECTOR
OF THE BUDGET**

Performance Bond #1 (Pages 90 to 93): Use if the total contract price is \$5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

PERFORMANCE BOND #1 (Page 1)

PERFORMANCE BOND #1

KNOW ALL PERSONS BY THESE PRESENTS, That we, _____

hereinafter referred to as the "Principal", and _____

hereinafter referred to as the "Surety" ("Sureties") are held and firmly bound to THE CITY OF NEW YORK, hereinafter referred to as the "City" or to its successors and assigns, in the penal sum of

(\$ _____) Dollars, lawful money of the United States, for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal is about to enter, or has entered, into a Contract in writing with the City for

a copy of which Contract is annexed to and hereby made a part of this bond as though herein set forth in full;

Performance Bond #1 (Pages 90 to 93): Use if the total contract price is \$5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

Bond No. RNS0130446

PERFORMANCE BOND #1 (Page 1)

PERFORMANCE BOND #1

KNOW ALL PERSONS BY THESE PRESENTS, That we, A. Aleem Construction Co., Inc.
1629 Park Avenue, Suite 1N, New York, NY 10029

hereinafter referred to as the "Principal", and RLI Insurance Company
9025 N. Lindbergh Drive, Peoria, IL 61615

hereinafter referred to as the "Surety" ("Sureties") are held and firmly bound to THE CITY OF NEW YORK, hereinafter referred to as the "City" or to its successors and assigns, in the penal sum of

Two Million Nine Hundred Forty Nine Thousand Nine Hundred Sixty Four and 00/100 Dollars

(\$ 2,949,964.00) Dollars, lawful money of the United States, for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal is about to enter, or has entered, into a Contract in writing with the City for

FMS ID: PV181HSA2 / E-PIN: 85015B0170001 / DDC PIN: 8502015PV0018C

Harlem School of The Arts, Phase II - Building Renovations

Borough of Manhattan, NY

a copy of which Contract is annexed to and hereby made a part of this bond as though herein set forth in full;

Performance Bond #1 (Pages 90 to 93): Use if the total contract price is \$5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

PERFORMANCE BOND #1 (Page 2)

NOW, THEREFORE, the conditions of this obligation are such that if the Principal, his or its representatives or assigns, shall well and faithfully perform the said Contract and all modifications, amendments, additions and alterations thereto that may hereafter be made, according to its terms and its true intent and meaning, including repair and or replacement of defective work and guarantees of maintenance for the periods stated in the Contract, and shall fully indemnify and save harmless the City from all cost and damage which it may suffer by reason of the Principal's default of the Contract, and shall fully reimburse and repay the City for all outlay and expense which the City may incur in making good any such default and shall protect the said City of New York against, and pay any and all amounts, damages, cost and judgments which may or shall be recovered against said City or its officers or agents or which the said City of New York may be called upon to pay any person or corporation by reason of any damages arising or growing out of the Principal's default of the Contract, then this obligation shall be null and void, otherwise to remain in full force and effect.

The Surety (Sureties), for value received, hereby stipulates and agrees, upon written notice from the City that the City has determined that the Principal is in default of the Contract, to (1) pay the City the cost to complete the contract as determined by the City in excess of the balance of the Contract held by the City, plus any damages or costs to which the City is entitled, up to the full amount of the above penal sum, (2) fully perform and complete the Work to be performed under the Contract, pursuant to the terms, conditions, and covenants thereof, or (3) tender a completion Contractor that is acceptable to the City. The Surety (Sureties) further agrees, at its option, either to notify the City that it elects to pay the city the cost of completion plus any applicable damages and costs under option (1) above, or to commence and diligently perform the Work specified in the Contract, including physical site work, within twenty-five (25) business days after written notice thereof from the City and, if the Surety elects to fully perform and complete the Work, then to complete all Work within the time set forth in the Contract or such other time as agreed to between the City and Surety in accordance with the Contract. If the Surety elects to tender payment pursuant to (1) above, then the Surety shall tender such amount within fifteen (15) business days notification from the City of the cost of completion. The Surety and the City reserve all rights and defenses each may have against the other; provided, however, that the Surety expressly agrees that its reservation of rights shall not provide a basis for non-performance of its obligation to pay the City the cost of completion, to commence and complete all Work as provided herein, or to tender a completion contractor.

The Surety (Sureties), for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety (Sureties) and its bond shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or to the said Contract or the Work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or any moneys due or to become due thereunder, and said Surety (Sureties) does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, and waivers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to subcontractors shall have the same effect as to said Surety (Sureties) as though done or omitted to be done by or in relation to said Principal. Notwithstanding the above, if the City makes payments to the Principal before the time required by the contract that in the aggregate exceed \$100,000 or 10% of the Contract price, whichever is less, and that have not become earned prior to the Principal being found to be in default, then all payments made to the Principal before the time required by the Contract shall be added to the remaining contract value available to be paid for the completion of the Contract as if such sums had not been paid to the Principal, but shall not provide a basis for non-performance of its obligation to pay the City the cost of completion, to commence and to complete all Work as provided herein, or to tender a completion contractor.

Performance Bond #1 (Pages 90 to 93): Use if the total contract price is \$5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

PERFORMANCE BOND #1 (Page 3)

IN WITNESS WHEREOF, the Principal and the Surety (Sureties) have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereunto affixed and these presents to be signed by their proper officers, this 29th day of June, 2016.

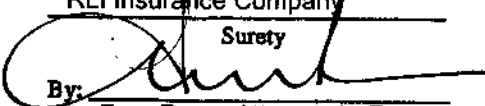
(Seal)

A. Aleem Construction Co., Inc. (L.S.)
Principal

By: _____

(Seal)

RLI Insurance Company
Surety

By: 
Fern Perry, Attorney-in-Fact

(Seal)

Surety

By: _____

(Seal)

Surety

By: _____

Bond Premium Rate _____

Bond Premium Cost _____

If the Contractor (Principal) is a partnership, the bond should be signed by each of the individuals who are partners.

If the Contractor (Principal) is a corporation, the bond should be signed in its correct corporate name by a duly authorized officer, agent, or attorney-in-fact.

There should be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts of the Contract.

Performance Bond #1 (Pages 90 to 93): Use if the total contract price is \$5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

PERFORMANCE BOND #1 (Page 4)

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of New York County of _____ ss:

On this _____ day of _____, _____, before me personally came _____ to me known, who, being by me duly sworn did depose and say that he resides at _____ that he is the _____ of the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

State of _____ County of _____ ss:

On this _____ day of _____, _____ before me personally appeared _____ to me known, and known to me to be one of the members of the firm of _____ described in and who executed the foregoing instrument; and he acknowledged to me that he executed the same as and for the act and deed of said firm.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____ County of _____ ss:

On this _____ day of _____, _____ before me personally appeared _____ to me known, and known to me to be the person described in and who executed the foregoing instrument; and acknowledged that he executed the same.

Notary Public or Commissioner of Deeds

Each executed bond should be accompanied by: (a) appropriate acknowledgments of the respective parties; (b) appropriate duly certified copy of Power of Attorney or other certificate of authority where bond is executed by agent, officer or other representative of Principal or Surety; (c) a duly certified extract from By-Laws or resolutions of Surety under which Power of Attorney or other certificate of authority of its agent, officer or representative was issued, and (d) certified copy of latest published financial statement of assets and liabilities of Surety.

* * * * *

Affix Acknowledgments and Justification of Sureties

ACKNOWLEDGMENT OF SURETY

STATE OF NEW YORK }
 } ss:
COUNTY OF NASSAU }

On June 29, 2016 before me personally came Fern Perry to me known who, being by me duly sworn, did depose and say that he/she resides at 255 Executive Drive, Plainview, New York 11803, that he/she is the Attorney-In-Fact of RLI Insurance Company the corporation described in and which executed the foregoing instrument; and that he/she signed his/her name thereto by order of the Board of Directors of said corporation.



Notary Public
Peter Henry
Notary Public State of NY
No. 01HE4784829
Qualified in Nassau County
Commission Expires January 31, 2018

POWER OF ATTORNEY
RLI Insurance Company
Contractors Bonding and Insurance Company

Know All Men by These Presents:

That this Power of Attorney is not valid or in effect unless attached to the bond which it authorizes executed, but may be detached by the approving officer if desired.

That this Power of Attorney may be effective and given to either or both of **RLI Insurance Company** and **Contractors Bonding and Insurance Company**, required for the applicable bond.

That **RLI Insurance Company** and/or **Contractors Bonding and Insurance Company**, each Illinois corporations (as applicable), each authorized and licensed to do business in all states and the District of Columbia do hereby make, constitute and appoint:

Peter Henry, Robert Finnell, Fern Perry, Rosanne Callahan, jointly or severally

in the City of Plainview, State of New York, as Attorney in Fact, with full power and authority hereby conferred upon him/her to sign, execute, acknowledge and deliver for and on its behalf as Surety, in general, any and all bonds, undertakings, and recognizances in an amount not to exceed Ten Million Dollars (\$10,000,000.00) for any single obligation.

The acknowledgment and execution of such bond by the said Attorney in Fact shall be as binding upon this Company as if such bond had been executed and acknowledged by the regularly elected officers of this Company.

RLI Insurance Company and **Contractors Bonding and Insurance Company**, as applicable, have each further certified that the following is a true and exact copy of the Resolution adopted by the Board of Directors of each such corporation, and now in force, to-wit:

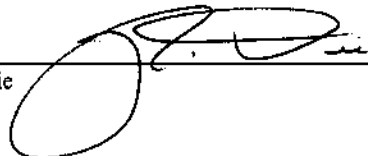
"All bonds, policies, undertakings, Powers of Attorney or other obligations of the Corporation shall be executed in the corporate name of the Corporation by the President, Secretary, any Assistant Secretary, Treasurer, or any Vice President, or by such other officers as the Board of Directors may authorize. The President, any Vice President, Secretary, any Assistant Secretary, or the Treasurer may appoint Attorneys in Fact or Agents who shall have authority to issue bonds, policies or undertakings in the name of the Corporation. The corporate seal is not necessary for the validity of any bonds, policies, undertakings, Powers of Attorney or other obligations of the Corporation. The signature of any such officer and the corporate seal may be printed by facsimile or other electronic image."

IN WITNESS WHEREOF, **RLI Insurance Company** and/or **Contractors Bonding and Insurance Company**, as applicable, have caused these presents to be executed by its respective Vice President with its corporate seal affixed this 20th day of February, 2015.

State of Illinois }
County of Peoria } SS



RLI Insurance Company
Contractors Bonding and Insurance Company

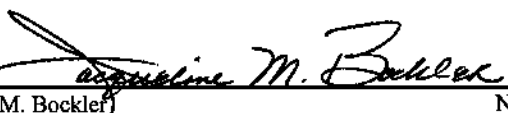
Roy C. Die  Vice President

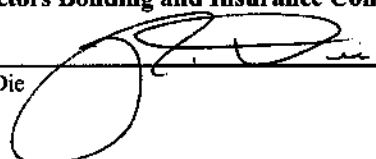
CERTIFICATE

On this 20th day of February, 2015, before me, a Notary Public, personally appeared Roy C. Die, who being by me duly sworn, acknowledged that he signed the above Power of Attorney as the aforesaid officer of the **RLI Insurance Company** and/or **Contractors Bonding and Insurance Company**, and acknowledged said instrument to be the voluntary act and deed of said corporation.

I, the undersigned officer of **RLI Insurance Company**, and/or **Contractors Bonding and Insurance Company**, each Illinois corporations, do hereby certify that the attached Power of Attorney is in full force and effect and is irrevocable; and furthermore, that the Resolution of the Company as set forth in the Power of Attorney, is now in force. In testimony whereof, I have hereunto set my hand and the seal of the **RLI Insurance Company** and/or **Contractors Bonding and Insurance Company** this day of ,

JUN 29 2016
RLI Insurance Company
Contractors Bonding and Insurance Company

Jacqueline M. Bockler  Notary Public

Roy C. Die  Vice President





RLI Insurance Company
 P.O. Box 3967 Peoria IL 61612-3967
 Phone: 309-692-1000 Fax: 309-683-1610

RLI Insurance Company

December 31, 2015

Admitted Assets

Investments:	
Fixed maturities	\$ 649,350,928
Equity securities	886,479,641
Short-term investments	3,616,870
Real estate	25,589,667
Properties held to produce income	0
Cash on hand and on deposit	14,281,348
Other invested assets	19,263,658
Receivables for securities	925,099
Agents' balances	75,730,616
Investment income due and accrued	6,471,239
Funds held	4,000
Reinsurance recoverable on paid losses	22,790,869
Federal income taxes receivable	243,641
Net deferred tax asset	0
Guarantee funds receivable or on deposit	55,809
Electronic data processing equipment, net of depreciation	733,924
Receivable from affiliates	12,292,822
Other admitted assets	7,263,351
Total Admitted Assets	\$ 1,725,093,482

State of Illinois }
 County of Peoria }

Liabilities and Surplus

Liabilities:	
Reserve for unpaid losses and loss adjustment expenses	\$ 467,302,987
Unearned premiums	232,132,017
Accrued expenses	61,363,378
Funds held	675,513
Advance premiums	5,797,135
Amounts withheld	60,525,980
Dividends declared and unpaid	23,945
Ceded reinsurance premium payable	24,419,854
Payable for securities	1,992,972
Statutory penalties	212,600
Current federal & foreign income taxes	0
Federal income tax payable	4,647,648
Borrowed money and accrued interest	0
Drafts outstanding	0
Payable to affiliate	24,369
Other liabilities	706,686
Total Liabilities	\$ 859,825,084
Surplus:	
Common stock	\$ 10,000,375
Additional paid-in capital	242,451,084
Unassigned surplus	612,816,939
Total Surplus	\$ 865,268,398
Total Liabilities and Surplus	\$ 1,725,093,482

The undersigned, being duly sworn, says: That he is the President of **RLI Insurance Company**; that said Company is a corporation duly organized, in the State of Illinois, and licensed and engaged in business in the State of _____ and has duly complied with all the requirements of the laws of said State applicable of said Company and is duly qualified to act as Surety under such laws; that said Company has also complied with and is duly qualified to act as Surety under the Act of Congress approved July 1947, 6U.S.C sec. 6-13; and that to the best of his knowledge and belief the above statement is a full, true, and correct statement of the financial condition of the said Company on the 31st day of December 2015.

Attest:



{ Corporate Seal Affixed }

Craig Kliethermes President

 Cherie L. Montgomery Assistant Secretary

Sworn to before me this 9th day of March, 2016.



{ Notarial Seal Affixed }

Jacqueline M. Bockler Notary Public, State of Illinois

Payment Bond (Pages 98 to 101): Use for any contract for which a Payment Bond is required.

Bond No. RNS0130446

PAYMENT BOND

PAYMENT BOND (Page 1)

KNOW ALL PERSONS BY THESE PRESENTS, That we, A. Aleem Construction Co., Inc.

1629 Park Avenue, Suite 1N, New York, NY 10029

hereinafter referred to as the "Principal", and RLI Insurance Company

9025 N. Lindbergh Drive, Peoria, IL 61615

hereinafter referred to as the "Surety" ("Sureties") are held and firmly bound to THE CITY OF NEW YORK, hereinafter referred to as the "City" or to its successors and assigns, in the penal sum of

Two Million Nine Hundred Forty Nine Thousand Nine Hundred Sixty Four and 00/100 Dollars

(\$2,949,964.00) Dollars, lawful money of the United States, for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal is about to enter, or has entered, into a Contract in writing with the City for

FMS ID: PV181HSA2 / E-PIN: 85015B0170001 / DDC PIN: 8502015PV0018C

Harlem School of The Arts, Phase II - Building Renovations

Borough of Manhattan, NY

a copy of which Contract is annexed to and hereby made a part of this bond as though herein set forth in full;

NOW, THEREFORE, the conditions of this obligation are such that if the Principal, his or its representatives or assigns and other Subcontractors to whom Work under this Contract is sublet and his or their successors and assigns shall promptly pay or cause to be paid all lawful claims for

(a) Wages and compensation for labor performed and services rendered by all persons engaged in the prosecution of the Work under said Contract, and any amendment or extension thereof or addition thereto, whether such persons be agents servants or employees of the Principal or any such Subcontractor, including all persons so

Payment Bond (Pages 98 to 101): Use for any contract for which a Payment Bond is required.

PAYMENT BOND (Page 2)

engaged who perform the work of laborers or mechanics at or in the vicinity of the site of the Project regardless of any contractual relationship between the Principal or such Subcontractors, or his or their successors or assigns, on the one hand and such laborers or mechanics on the other, but not including office employees not regularly stationed at the site of the project; and

(b) Materials and supplies (whether incorporated in the permanent structure or not), as well as teams, fuels, oils, implements or machinery furnished, used or consumed by said Principal or any subcontractor at or in the vicinity of the site of the Project in the prosecution of the Work under said Contract and any amendment or extension thereof or addition thereto; then this obligation shall be void, otherwise to remain in full force and effect.

This bond is subject to the following additional conditions, limitations and agreements:

(a) The Principal and Surety (Sureties) agree that this bond shall be for the benefit of any materialmen or laborer having a just claim, as well as the City itself.

(b) All persons who have performed labor, rendered services or furnished materials and supplies, as aforesaid, shall have a direct right of action against the Principal and his, its or their successors and assigns, and the Surety (Sureties) herein, or against either or both or any of them and their successors and assigns. Such persons may sue in their own name, and may prosecute the suit to judgment and execution without the necessity of joining with any other persons as party plaintiff.

(c) The Principal and Surety (Sureties) agree that neither of them will hold the City liable for any judgment for costs of otherwise, obtained by either or both of them against a laborer or materialman in a suit brought by either a laborer or materialman under this bond for moneys allegedly due for performing work or furnishing material.

(d) The Surety (Sureties) or its successors and assigns shall not be liable for any compensation recoverable by an employee or laborer under the Workmen's Compensation Law.

(e) In no event shall the Surety (Sureties), or its successors or assigns, be liable for a greater sum than the penalty of this bond or be subject to any suit, action or proceeding hereon that is instituted by any person, firm, or corporation hereunder later than two years after the complete performance of said Contract and final settlement thereof.

The Principal, for himself and his successors and assigns, and the Surety (Sureties), for itself and its successors and assigns, do hereby expressly waive any objection that might be interposed as to the right of the City to require a bond containing the foregoing provisions, and they do hereby further expressly waive any defense which they or either of them might interpose to an action brought hereon by any person, firm or corporation, including subcontractors, materialmen and third persons, for work, labor, services, supplies or material performed rendered, or furnished as aforesaid upon the ground that there is no law authorizing the City to require the foregoing provisions to be placed in this bond.

And the Surety (Sureties), for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety (Sureties), and its bonds shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or of the said Contract or the work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any part thereof, or of any Work to be performed, or any moneys due to become due thereunder and said Surety (Sureties) does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, Subcontractors, and other transferees shall have the same effect as to said Surety (Sureties) as though done or omitted to be done or in relation to said Principal.

Payment Bond (Pages 98 to 101): Use for any contract for which a Payment Bond is required.

PAYMENT BOND (Page 3)

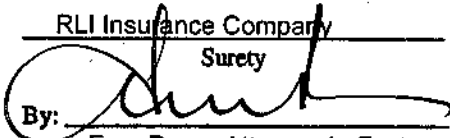
IN WITNESS HEREOF, the Principal and the Surety (Sureties) have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereunto affixed and these presents to be signed by their proper officers, this 29th day of June, 2016.

(Seal)

A. Aleem Construction Co., Inc. (L.S.)
Principal

By: _____

(Seal)

RLI Insurance Company
Surety
By: 
Fern Perry, Attorney-in-Fact

(Seal)

Surety

By: _____

(Seal)

Surety

By: _____

(Seal)

Surety

By: _____

If the Contractor (Principal) is a partnership, the bond should be signed by each of the individuals who are partners.

If the Contractor (Principal) is a corporation, the bond should be signed in its correct corporate name by a duly authorized officer, agent, or attorney-in-fact.

There should be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts of the Contract.

Payment Bond (Pages 98 to 101): Use for any contract for which a Payment Bond is required.

PAYMENT BOND (Page 4)

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of _____ County of _____ ss:

On this _____ day of _____ before me personally came to me known, who, being by me duly sworn did depose and say that he resides at _____ that he is the _____ of the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

State of _____ County of _____ ss:

On this _____ day of _____ before me personally appeared to me known, and known to me to be one of the members of the firm of _____ described in and who executed the foregoing instrument; and he acknowledged to me that he executed the same as and for the act and deed of said firm.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____ County of _____ ss:

On this _____ day of _____ before me personally appeared to me known, and known to me to be the person described in and who executed the foregoing instrument; and acknowledged that he executed the same.

Notary Public or Commissioner of Deeds

Each executed bond should be accompanied by: (a) appropriate acknowledgments of the respective parties; (b) appropriate duly certified copy of Power of Attorney or other certificate of authority where bond is executed by agent, officer or other representative of Principal or Surety; (c) a duly certified extract from By-Laws or resolutions of Surety under which Power of Attorney or other certificate of authority of its agent, officer or representative was issued, and (d) certified copy of latest published financial statement of assets and liabilities of Surety.

* * * * *

Affix Acknowledgments and Justification of Sureties

ACKNOWLEDGMENT OF SURETY

STATE OF NEW YORK }
COUNTY OF NASSAU } ss:

On June 29, 2016 before me personally came Fern Perry to me known who, being by me duly sworn, did depose and say that he/she resides at 255 Executive Drive, Plainview, New York 11803, that he/she is the Attorney-In-Fact of RLI Insurance Company the corporation described in and which executed the foregoing instrument; and that he/she signed his/her name thereto by order of the Board of Directors of said corporation.



Notary Public
Peter Henry
Notary Public State of NY
No. 01HE4784829
Qualified in Nassau County
Commission Expires January 31, 2018

POWER OF ATTORNEY
RLI Insurance Company
Contractors Bonding and Insurance Company

Know All Men by These Presents:

That this Power of Attorney is not valid or in effect unless attached to the bond which it authorizes executed, but may be detached by the approving officer if desired.

That this Power of Attorney may be effective and given to either or both of **RLI Insurance Company** and **Contractors Bonding and Insurance Company**, required for the applicable bond.

That **RLI Insurance Company** and/or **Contractors Bonding and Insurance Company**, each Illinois corporations (as applicable), each authorized and licensed to do business in all states and the District of Columbia do hereby make, constitute and appoint:

Peter Henry, Robert Finnell, Fern Perry, Rosanne Callahan, jointly or severally

in the City of Plainview, State of New York, as Attorney in Fact, with full power and authority hereby conferred upon him/her to sign, execute, acknowledge and deliver for and on its behalf as Surety, in general, any and all bonds, undertakings, and recognizances in an amount not to exceed Ten Million Dollars (\$10,000,000.00) for any single obligation.

The acknowledgment and execution of such bond by the said Attorney in Fact shall be as binding upon this Company as if such bond had been executed and acknowledged by the regularly elected officers of this Company.

RLI Insurance Company and **Contractors Bonding and Insurance Company**, as applicable, have each further certified that the following is a true and exact copy of the Resolution adopted by the Board of Directors of each such corporation, and now in force, to-wit:

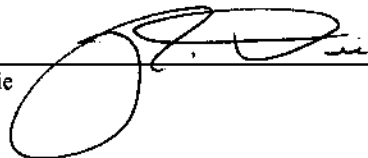
"All bonds, policies, undertakings, Powers of Attorney or other obligations of the Corporation shall be executed in the corporate name of the Corporation by the President, Secretary, any Assistant Secretary, Treasurer, or any Vice President, or by such other officers as the Board of Directors may authorize. The President, any Vice President, Secretary, any Assistant Secretary, or the Treasurer may appoint Attorneys in Fact or Agents who shall have authority to issue bonds, policies or undertakings in the name of the Corporation. The corporate seal is not necessary for the validity of any bonds, policies, undertakings, Powers of Attorney or other obligations of the Corporation. The signature of any such officer and the corporate seal may be printed by facsimile or other electronic image."

IN WITNESS WHEREOF, **RLI Insurance Company** and/or **Contractors Bonding and Insurance Company**, as applicable, have caused these presents to be executed by its respective Vice President with its corporate seal affixed this 20th day of February, 2015.

State of Illinois }
County of Peoria } SS



RLI Insurance Company
Contractors Bonding and Insurance Company

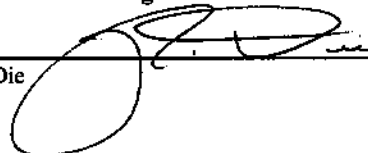
Roy C. Die  Vice President

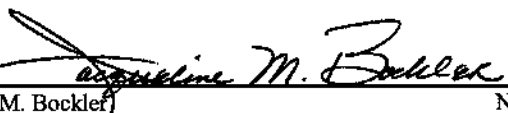
CERTIFICATE

I, the undersigned officer of **RLI Insurance Company**, and/or **Contractors Bonding and Insurance Company**, each Illinois corporations, do hereby certify that the attached Power of Attorney is in full force and effect and is irrevocable; and furthermore, that the Resolution of the Company as set forth in the Power of Attorney, is now in force. In testimony whereof, I have hereunto set my hand and the seal of the **RLI Insurance Company** and/or **Contractors Bonding and Insurance Company** this _____ day of _____,

JUN 29 2016

RLI Insurance Company
Contractors Bonding and Insurance Company

Roy C. Die  Vice President

Jacqueline M. Bockler  Notary Public





RLI Insurance Company
 P.O. Box 3967 Peoria IL 61612-3967
 Phone: 309-692-1000 Fax: 309-683-1610

RLI Insurance Company

December 31, 2015

Admitted Assets

Investments:	
Fixed maturities	\$ 649,350,928
Equity securities	886,479,641
Short-term investments	3,616,870
Real estate	25,589,667
Properties held to produce income	0
Cash on hand and on deposit	14,281,348
Other invested assets	19,263,658
Receivables for securities	925,099
Agents' balances	75,730,616
Investment income due and accrued	6,471,239
Funds held	4,000
Rinsurance recoverable on paid losses	22,790,869
Federal income taxes receivable	243,641
Net deferred tax asset	0
Guarantee funds receivable or on deposit	55,809
Electronic data processing equipment, net of depreciation	733,924
Receivable from affiliates	12,292,822
Other admitted assets	7,263,351
Total Admitted Assets	\$ 1,725,093,482

State of Illinois }
 County of Peoria }

Liabilities and Surplus

Liabilities:	
Reserve for unpaid losses and loss adjustment expenses	\$ 467,302,987
Unearned premiums	232,132,017
Accrued expenses	61,363,378
Funds held	675,513
Advance premiums	5,797,135
Amounts withheld	60,525,980
Dividends declared and unpaid	23,945
Ceded reinsurance premium payable	24,419,854
Payable for securities	1,992,972
Statutory penalties	212,600
Current federal & foreign income taxes	0
Federal income tax payable	4,647,648
Borrowed money and accrued interest	0
Drafts outstanding	0
Payable to affiliate	24,369
Other liabilities	706,686
Total Liabilities	\$ 859,825,084
Surplus:	
Common stock	\$ 10,000,375
Additional paid-in capital	242,451,084
Unassigned surplus	612,816,939
Total Surplus	\$ 865,268,398
Total Liabilities and Surplus	\$ 1,725,093,482

The undersigned, being duly sworn, says: That he is the President of **RLI Insurance Company**; that said Company is a corporation duly organized, in the State of Illinois, and licensed and engaged in business in the State of _____ and has duly complied with all the requirements of the laws of said State applicable of said Company and is duly qualified to act as Surety under such laws; that said Company has also complied with and is duly qualified to act as Surety under the Act of Congress approved July 1947, 6U.S.C sec. 6-13; and that to the best of his knowledge and belief the above statement is a full, true, and correct statement of the financial condition of the said Company on the 31st day of December 2015.

Attest:



{ Corporate Seal Affixed }

Craig Kliethermes President

 Cherie L. Montgomery Assistant Secretary

Sworn to before me this 9th day of March, 2016.



{ Notarial Seal Affixed }

Jacqueline M. Bockler Notary Public, State of Illinois



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

06/28/2016

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER The Carmoon Group, Ltd. 240 Fulton Avenue Hempstead NY 11550	CONTACT NAME: Bryant Arthur	PHONE (A/C, No. Ext): (516) 292-3780	FAX (A/C, No.): (516) 292-3780
	E-MAIL ADDRESS: barthur@carmoongroup.com		
INSURER(S) AFFORDING COVERAGE			NAIC #
INSURER A: Colony Specialty Insurance Co.			36927
INSURER B: Hudson Excess Insurance Co.			14484
INSURER C: New York State Insurance Fund			524210
INSURER D: Standard Security Insurance			
INSURER E:			
INSURER F:			

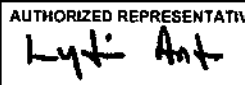
COVERAGES **CERTIFICATE NUMBER:** Cert ID 550 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> Contractual Liab			103 GL 0013857-00A.	04/29/2016	04/29/2017	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 100,000 MED EXP (Any one person) \$ 5,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 \$	
	GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PROJECT <input type="checkbox"/> LOC OTHER:							
	<input type="checkbox"/> AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> NON-OWNED AUTOS						COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$	
B	<input type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED \$ RETENTION \$			4688807	04/29/2016	04/29/2017	EACH OCCURRENCE \$ 5,000,000 AGGREGATE \$ 5,000,000 \$	
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? <input type="checkbox"/> Y <input checked="" type="checkbox"/> N (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below			2370142-8	09/19/2015	09/19/2016	<input type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000	
D	Disability			DEL98238	03/30/2016	03/30/2017	\$ Statutory \$	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
 PROJECT: Harlem School of the Arts, Inc.

City of New York including its officials and employees with coverage at least as broad as ISO forms CG2010 and 2037 and all person or organization if any that Article 22 of the Contract requires to be named as additional insured with coverage at least as broad as ISO Form CG 2026. The additional insured endorsement shall either specify the entity name, if known or the entity title. The Harlem School of Arts, Inc. are listed as the additional insured.

CERTIFICATE HOLDER ACCO'S OFFICE INSURANCE UNIT 30-30 THOMSON AVENUE 4TH FLOOR LONG ISLAND CITY NY 11101	CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE 
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ACORD 25 (2014/01)

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SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART III. Broker's Certification

[Pursuant to Article 22.3.3 of the Contract, every Certificate of Insurance must be accompanied by either the following certification by the broker setting forth the following text and required information and signatures or certified copies of all policies referenced in the Certificate of Insurance.]

CERTIFICATION BY BROKER

The undersigned insurance broker represents to the City of New York that the attached Certificate of Insurance is accurate in all material respects, and that the described insurance is effective as of the date of this Certification.

The Carmoon Group Ltd.

[Name of broker (typewritten)]

240 Fulton Avenue Hempstead NY 11550

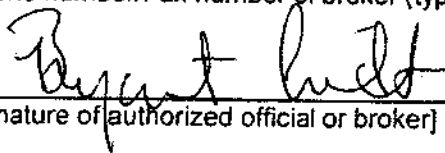
[Address of broker (typewritten)]

BArthur@carmoongroup.com

[Email address of broker (typewritten)]

(516) 292-3780 / (516) 908-7879

[Phone number/Fax number of broker (typewritten)]



[Signature of authorized official or broker]

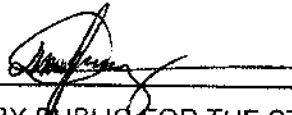
Bryant Arthur, President

[Name and title of authorized official (typewritten)]

State of NEW YORK)
County of NASSAU) ss:

Sworn to before me this

28th day of JUNE, 2016



NOTARY PUBLIC FOR THE STATE OF NEW YORK

DENNIS A. HENRIQUEZ
Notary Public, State of New York
No. 01HE6160802
Qualified in Nassau & Certified in Queens
Commission Expires February 12, 2019

Performance Bond #1 (Pages 90 to 93): Use if the total contract price is \$5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

PERFORMANCE BOND #1 (Page 2)

NOW, THEREFORE, the conditions of this obligation are such that if the Principal, his or its representatives or assigns, shall well and faithfully perform the said Contract and all modifications, amendments, additions and alterations thereto that may hereafter be made, according to its terms and its true intent and meaning, including repair and or replacement of defective work and guarantees of maintenance for the periods stated in the Contract, and shall fully indemnify and save harmless the City from all cost and damage which it may suffer by reason of the Principal's default of the Contract, and shall fully reimburse and repay the City for all outlay and expense which the City may incur in making good any such default and shall protect the said City of New York against, and pay any and all amounts, damages, cost and judgments which may or shall be recovered against said City or its officers or agents or which the said City of New York may be called upon to pay any person or corporation by reason of any damages arising or growing out of the Principal's default of the Contract, then this obligation shall be null and void, otherwise to remain in full force and effect.

The Surety (Sureties), for value received, hereby stipulates and agrees, upon written notice from the City that the City has determined that the Principal is in default of the Contract, to (1) pay the City the cost to complete the contract as determined by the City in excess of the balance of the Contract held by the City, plus any damages or costs to which the City is entitled, up to the full amount of the above penal sum, (2) fully perform and complete the Work to be performed under the Contract, pursuant to the terms, conditions, and covenants thereof, or (3) tender a completion Contractor that is acceptable to the City. The Surety (Sureties) further agrees, at its option, either to notify the City that it elects to pay the city the cost of completion plus any applicable damages and costs under option (1) above, or to commence and diligently perform the Work specified in the Contract, including physical site work, within twenty-five (25) business days after written notice thereof from the City and, if the Surety elects to fully perform and complete the Work, then to complete all Work within the time set forth in the Contract or such other time as agreed to between the City and Surety in accordance with the Contract. If the Surety elects to tender payment pursuant to (1) above, then the Surety shall tender such amount within fifteen (15) business days notification from the City of the cost of completion. The Surety and the City reserve all rights and defenses each may have against the other; provided, however, that the Surety expressly agrees that its reservation of rights shall not provide a basis for non-performance of its obligation to pay the City the cost of completion, to commence and complete all Work as provided herein, or to tender a completion contractor.

The Surety (Sureties), for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety (Sureties) and its bond shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or to the said Contract or the Work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or any moneys due or to become due thereunder; and said Surety (Sureties) does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, and waivers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to subcontractors shall have the same effect as to said Surety (Sureties) as though done or omitted to be done by or in relation to said Principal. Notwithstanding the above, if the City makes payments to the Principal before the time required by the contract that in the aggregate exceed \$100,000 or 10% of the Contract price, whichever is less, and that have not become earned prior to the Principal being found to be in default, then all payments made to the Principal before the time required by the Contract shall be added to the remaining contract value available to be paid for the completion of the Contract as if such sums had not been paid to the Principal, but shall not provide a basis for non-performance of its obligation to pay the City the cost of completion, to commence and to complete all Work as provided herein, or to tender a completion contractor.

Performance Bond #1 (Pages 90 to 93): Use if the total contract price is \$5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

PERFORMANCE BOND #1 (Page 3)

IN WITNESS WHEREOF, the Principal and the Surety (Sureties) have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereunto affixed and these presents to be signed by their proper officers, this _____ day of _____.

(Seal) _____ (L.S.)
Principal

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

Bond Premium Rate _____

Bond Premium Cost _____

If the Contractor (Principal) is a partnership, the bond should be signed by each of the individuals who are partners.

If the Contractor (Principal) is a corporation, the bond should be signed in its correct corporate name by a duly authorized officer, agent, or attorney-in-fact.

There should be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts of the Contract.

Performance Bond #1 (Pages 90 to 93): Use if the total contract price is \$5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

PERFORMANCE BOND #1 (Page 4)

ACKNOWLEDGMENT OF PRINCIPAL IF A CORPORATION

State of _____ County of _____ ss:

On this _____ day of _____, _____ before me personally came _____ to me known, who, being by me duly sworn did depose and say that he resides at _____ that he is the _____ of the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL IF A PARTNERSHIP

State of _____ County of _____ ss:

On this _____ day of _____, _____ before me personally appeared _____ to me known, and known to me to be one of the members of the firm of _____ described in and who executed the foregoing instrument; and he acknowledged to me that he executed the same as and for the act and deed of said firm.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL IF AN INDIVIDUAL

State of _____ County of _____ ss:

On this _____ day of _____, _____ before me personally appeared _____ to me known, and known to me to be the person described in and who executed the foregoing instrument; and acknowledged that he executed the same.

Notary Public or Commissioner of Deeds

Each executed bond should be accompanied by: (a) appropriate acknowledgments of the respective parties; (b) appropriate duly certified copy of Power of Attorney or other certificate of authority where bond is executed by agent, officer or other representative of Principal or Surety; (c) a duly certified extract from By-Laws or resolutions of Surety under which Power of Attorney or other certificate of authority of its agent, officer or representative was issued, and (d) certified copy of latest published financial statement of assets and liabilities of Surety.

* * * * *

Affix Acknowledgments and Justification of Sureties

Performance Bond #2 (Pages 94 to 97): Use if the total contract price is more than \$5 Million.

PERFORMANCE BOND #2 (Page 1)

PERFORMANCE BOND #2

KNOW ALL PERSONS BY THESE PRESENTS, That we, _____

hereinafter referred to as the "Principal", and _____

hereinafter referred to as the "Surety" ("Sureties") are held and firmly bound to THE CITY OF NEW YORK, hereinafter referred to as the "City" or to its successors and assigns, in the penal sum of

(\$ _____) Dollars, lawful money of the United States, for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal is about to enter, or has entered, into a Contract in writing with the City for

a copy of which Contract is annexed to and hereby made a part of this bond as though herein set forth in full;

Performance Bond #2 (Pages 94 to 97): Use if the total contract price is more than \$5 Million.

PERFORMANCE BOND #2 (Page2)

NOW, THEREFORE, the conditions of this obligation are such that if the Principal, his or its representatives or assigns, shall well and faithfully perform the said Contract and all modifications, amendments, additions and alterations thereto that may hereafter be made, according to its terms and its true intent and meaning, including repair and or replacement of defective work and guarantees of maintenance for the periods stated in the Contract, and shall fully indemnify and save harmless the City from all cost and damage which it may suffer by reason of the Principal's default of the Contract, and shall fully reimburse and repay the City for all outlay and expense which the City may incur in making good any such default and shall protect the said City of New York against, and pay any and all amounts, damages, cost and judgments which may or shall be recovered against said City or its officers or agents or which the said City of New York may be called upon to pay any person or corporation by reason of any damages arising or growing out of the Principal's default of the Contract, then this obligation shall be null and void, otherwise to remain in full force and effect.

The Surety (Sureties), for value received, hereby stipulates and agrees, upon written notice from the City that the City has determined that the Principal is in default of the Contract, to either (1) pay the full amount of the above penal sum in complete discharge and exoneration of this bond and of all the liabilities of the Surety relating to this bond, or (2) fully perform and complete the Work to be performed under the Contract, pursuant to the terms, conditions, and covenants thereof. The Surety (Sureties) further agrees, at its option, either to tender the penal sum or to commence and diligently perform the Work specified in the Contract, including physical site work, within twenty-five (25) business days after written notice thereof from the City and to complete all Work within the time set forth in the Contract or such other time as agreed to between the City and Surety in accordance with the Contract. The Surety and the City reserve all rights and defenses each may have against the other; provided, however, that the Surety expressly agrees that its reservation of rights shall not provide a basis for non-performance of its obligation to commence and to complete all Work as provided herein.

The Surety (Sureties), for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety (Sureties) and its bond shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or to the said Contract or the Work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any Work to be performed or any moneys due or to become due thereunder; and said Surety (Sureties) does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, subcontractors, and other transferees shall have the same effect as to said Surety (Sureties) as though done or omitted to be done by or in relation to said Principal.

Performance Bond #2 (Pages 94 to 97): Use if the total contract price is more than \$5 Million.

PERFORMANCE BOND #2 (Page 3)

IN WITNESS WHEREOF, the Principal and the Surety (Sureties) have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereunto affixed and these presents to be signed by their proper officers, this _____ day of _____, _____.

(Seal) _____ (L.S.)
Principal

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

Bond Premium Rate _____

Bond Premium Cost _____

If the Contractor (Principal) is a partnership, the bond should be signed by each of the individuals who are partners.

If the Contractor (Principal) is a corporation, the bond should be signed in its correct corporate name by a duly authorized officer, agent, or attorney-in-fact.

There should be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts of the Contract.

Performance Bond #2 (Pages 94 to 97): Use if the total contract price is more than \$5 Million.

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of _____ County of _____ ss:

On this _____ day of _____, 20____ before me personally came _____ to me known, who, being by me duly sworn did depose and say that he/she resides at _____; that he/she is the _____ of _____ the corporation described in and which executed the foregoing instrument; and that he signed his name to the foregoing instrument by order of the directors of said corporation as the duly authorized and binding act thereof.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

State of _____ County of _____ ss:

On this _____ day of _____, 20____ before me personally came _____ to me known, who, being by me duly sworn did depose and say that he/she resides at _____; that he/she is _____ partner of _____ a limited/general partnership existing under the laws of the State of _____ the partnership described in and which executed the foregoing instrument; and that he/she signed his/her name to the foregoing instrument as the duly authorized and binding act of said partnership.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____ County of _____ ss:

On this _____ day of _____, 20____ before me personally came _____ to me known, who, being by me duly sworn did depose and say that he/she resides at _____, and that he/she is the individual whose name is subscribed to the within instrument and acknowledged to me that by his/her signature on the instrument, said individual executed the instrument.

Notary Public or Commissioner of Deeds

Each executed bond should be accompanied by: (a) appropriate acknowledgments of the respective parties; (b) appropriate duly certified copy of Power of Attorney or other certificate of authority where bond is executed by agent, officer or other representative of Principal or Surety; (c) a duly certified extract from By-Laws or resolutions of Surety under which Power of Attorney or other certificate of authority of its agent, officer or representative was issued, and (d) certified copy of latest published financial statement of assets and liabilities of Surety.

Affix Acknowledgments and Justification of Sureties.

Payment Bond (Pages 98 to 101): Use for any contract for which a Payment Bond is required.

PAYMENT BOND (Page 1)

PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS, That we, _____

hereinafter referred to as the "Principal", and _____

hereinafter referred to as the "Surety" ("Sureties") are held and firmly bound to THE CITY OF NEW YORK, hereinafter referred to as the "City" or to its successors and assigns, in the penal sum of

(\$ _____) Dollars, lawful money of the United States, for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal is about to enter, or has entered, into a Contract in writing with the City for

a copy of which Contract is annexed to and hereby made a part of this bond as though herein set forth in full;

NOW, THEREFORE, the conditions of this obligation are such that if the Principal, his or its representatives or assigns and other Subcontractors to whom Work under this Contract is sublet and his or their successors and assigns shall promptly pay or cause to be paid all lawful claims for

(a) Wages and compensation for labor performed and services rendered by all persons engaged in the prosecution of the Work under said Contract, and any amendment or extension thereof or addition thereto, whether such persons be agents servants or employees of the Principal or any such Subcontractor, including all persons so

Payment Bond (Pages 98 to 101): Use for any contract for which a Payment Bond is required.

PAYMENT BOND (Page 2)

engaged who perform the work of laborers or mechanics at or in the vicinity of the site of the Project regardless of any contractual relationship between the Principal or such Subcontractors, or his or their successors or assigns, on the one hand and such laborers or mechanics on the other, but not including office employees not regularly stationed at the site of the project; and

(b) Materials and supplies (whether incorporated in the permanent structure or not), as well as teams, fuels, oils, implements or machinery furnished, used or consumed by said Principal or any subcontractor at or in the vicinity of the site of the Project in the prosecution of the Work under said Contract and any amendment or extension thereof or addition thereto; then this obligation shall be void, otherwise to remain in full force and effect.

This bond is subject to the following additional conditions, limitations and agreements:

(a) The Principal and Surety (Sureties) agree that this bond shall be for the benefit of any materialmen or laborer having a just claim, as well as the City itself.

(b) All persons who have performed labor, rendered services or furnished materials and supplies, as aforesaid, shall have a direct right of action against the Principal and his, its or their successors and assigns, and the Surety (Sureties) herein, or against either or both or any of them and their successors and assigns. Such persons may sue in their own name, and may prosecute the suit to judgment and execution without the necessity of joining with any other persons as party plaintiff.

(c) The Principal and Surety (Sureties) agree that neither of them will hold the City liable for any judgment for costs of otherwise, obtained by either or both of them against a laborer or materialman in a suit brought by either a laborer or materialman under this bond for moneys allegedly due for performing work or furnishing material.

(d) The Surety (Sureties) or its successors and assigns shall not be liable for any compensation recoverable by an employee or laborer under the Workmen's Compensation Law.

(e) In no event shall the Surety (Sureties), or its successors or assigns, be liable for a greater sum than the penalty of this bond or be subject to any suit, action or proceeding hereon that is instituted by any person, firm, or corporation hereunder later than two years after the complete performance of said Contract and final settlement thereof.

The Principal, for himself and his successors and assigns, and the Surety (Sureties), for itself and its successors and assigns, do hereby expressly waive any objection that might be interposed as to the right of the City to require a bond containing the foregoing provisions, and they do hereby further expressly waive any defense which they or either of them might interpose to an action brought hereon by any person, firm or corporation, including subcontractors, materialmen and third persons, for work, labor, services, supplies or material performed rendered, or furnished as aforesaid upon the ground that there is no law authorizing the City to require the foregoing provisions to be placed in this bond.

And the Surety (Sureties), for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety (Sureties), and its bonds shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or of the said Contract or the work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any part thereof, or of any Work to be performed, or any moneys due to become due thereunder and said Surety (Sureties) does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, Subcontractors, and other transferees shall have the same effect as to said Surety (Sureties) as though done or omitted to be done or in relation to said Principal.

Payment Bond (Pages 98 to 101): Use for any contract for which a Payment Bond is required.

PAYMENT BOND (Page 3)

IN WITNESS HEREOF, the Principal and the Surety (Sureties) have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereunto affixed and these presents to be signed by their proper officers, this _____ day of _____, _____.

(Seal) _____ (L.S.)
Principal

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

If the Contractor (Principal) is a partnership, the bond should be signed by each of the individuals who are partners.

If the Contractor (Principal) is a corporation, the bond should be signed in its correct corporate name by a duly authorized officer, agent, or attorney-in-fact.

There should be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts of the Contract.

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of _____ County of _____ ss:

On this _____ day of _____ before me personally came to me known, who, being by me duly sworn did depose and say that he resides at _____ that he is the _____ of the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

State of _____ County of _____ ss:

On this _____ day of _____ before me personally appeared to me known, and known to me to be one of the members of the firm of _____ described in and who executed the foregoing instrument; and he acknowledged to me that he executed the same as and for the act and deed of said firm.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____ County of _____ ss:

On this _____ day of _____ before me personally appeared to me known, and known to me to be the person described in and who executed the foregoing instrument; and acknowledged that he executed the same.

Notary Public or Commissioner of Deeds

Each executed bond should be accompanied by: (a) appropriate acknowledgments of the respective parties; (b) appropriate duly certified copy of Power of Attorney or other certificate of authority where bond is executed by agent, officer or other representative of Principal or Surety; (c) a duly certified extract from By-Laws or resolutions of Surety under which Power of Attorney or other certificate of authority of its agent, officer or representative was issued, and (d) certified copy of latest published financial statement of assets and liabilities of Surety.

Affix Acknowledgments and Justification of Sureties

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OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

LABOR LAW §220 PREVAILING WAGE SCHEDULE

Workers, Laborers and Mechanics employed on a public work project must receive not less than the prevailing rate of wage and benefits for the classification of work performed by each upon such public work. Pursuant to Labor Law §220 the Comptroller of the City of New York has promulgated this schedule solely for Workers, Laborers and Mechanics engaged by private contractors on New York City public work contracts.

This schedule is a compilation of separate determinations of the prevailing rate of wage and supplements made by the Comptroller for each trade classification listed herein pursuant to New York State Labor Law section 220 (5). The source of the wage and supplement rates, whether a collective bargaining agreement, survey data or other, is listed at the end of each classification.

Agency Chief Contracting Officers should contact the Bureau of Labor Law's Classification Unit with any questions concerning trade classifications, prevailing rates or prevailing practices with respect to procurement on New York City public works contracts. Contractors are advised to review the Comptroller's Prevailing Wage Schedule before bidding on public works contracts. Contractors with questions concerning trade classifications, prevailing rates or prevailing practices with respect to public works contracts in the procurement stage must contact the contracting agency responsible for the procurement.

Any error as to compensation under the prevailing wage law or other information as to trade classification, made by the contracting agency in the contract documents or in any other communication, will not preclude a finding against the contractor of prevailing wage violation.

Any questions concerning trade classifications, prevailing rates or prevailing practices on New York City public works contracts that have already been awarded may be directed to the Bureau of Labor Law's Classification Unit by calling (212) 669-7974. All callers must have the agency name and contract registration number available when calling with questions on public works contracts. Please direct all other compliance issues to: Bureau of Labor Law, Attn: Wasył Kinach, P.E., Office of the Comptroller, 1 Centre Street, Room 1122, New York, N.Y. 10007; Fax (212) 669-4002.

The appropriate schedule of prevailing wages and benefits must be posted at all public work sites pursuant to Labor Law §220 (3-a) (a).

This schedule is applicable to work performed during the effective period, unless otherwise noted. Changes to this schedule are published on our web site www.comptroller.nyc.gov. Contractors must pay the wages and supplements in effect when the worker, laborer, mechanic performs the work. Preliminary schedules for future one-year periods appear in the City Record on or about June 1 each succeeding year. Final schedules appear on or about July 1 in the City Record and on our web site www.comptroller.nyc.gov.

The Comptroller's Office has attempted to include all overtime, shift and night differential, Holiday, Saturday, Sunday or other premium time work. However, this schedule does not set forth every prevailing practice with respect to such rates with which employers must comply. All such practices are nevertheless part of the employer's prevailing wage obligation and contained in the collective bargaining agreements of the prevailing wage unions. These collective bargaining agreements are available for inspection by appointment. Requests for appointments may be made by calling (212) 669-4443, Monday through Friday between the hours of 9 a.m. and 5 p.m.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Prevailing rates and ratios for apprentices are attached to this schedule in the Appendix. Pursuant to Labor Law §220 (3-e), only apprentices who are individually registered in a bona fide program to which the employer contractor is a participant, registered with the New York State Department of Labor, may be employed on a public work project. Workers who are not journey persons or not registered apprentices pursuant to Labor Law §220 (3-e) may not be substituted for apprentices and must be paid as journey persons.

Public Work construction, reconstruction, demolition, excavation, rehabilitation, repair, renovation, alteration, or improvement contracts awarded pursuant to a Project Labor Agreement ("PLA") in accordance with Labor Law section 222 may have different labor standards for shift, premium and overtime work. Please refer to the PLA's pre-negotiated labor agreements for wage and benefit rates applicable to work performed outside of the regular workday. More information is available at the Mayor's Office of Contract Services (MOCS) web page at <http://www.nyc.gov/html/mocs/html/vendors/pla.shtml>.

All the provisions of Labor Law section 220 remain applicable to PLA work including, but not limited to, the enforcement of prevailing wage requirements by the Comptroller; however, we will enforce shift, premium, overtime and other non-standard rates as they appear in a project's pre-negotiated labor agreement.

In order to meet their obligation to provide prevailing supplemental benefits to each covered employee, employers must either:

- 1) Provide bona-fide benefits which cost the employer no less than the prevailing supplemental benefits rate; or
- 2) Supplement the employee's hourly wage by an amount no less than the prevailing supplemental benefits rate; or
- 3) Provide a combination of bona-fide benefits and wage supplements which cost the employer no less than the prevailing supplemental benefits rate in total.

Particular attention should be given to the supplemental benefits requirement. Although in most instances the payment or provision for supplemental benefits is for each hour worked, some classifications require the payment or provision of supplemental benefits for each hour paid. Consequently, some prevailing practices require benefits to be purchased at the overtime, shift differential, Holiday, Saturday, Sunday or other premium time rate.

Benefits are paid for EACH HOUR WORKED unless otherwise noted.

Wasył Kinach, P.E.
Director of Classifications
Bureau of Labor Law

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OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

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ASBESTOS HANDLER

(Hazardous Material; Disturbs, removes, encapsulates, repairs, or encloses friable asbestos material)

Asbestos Handler

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$36.00

Supplemental Benefit Rate per Hour: \$15.45

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Sunday.

Time and one half the regular hourly rate after 40 hours in any work week.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

Easter

Paid Holidays

None

(Local #78 and Local #12A)

BLASTER

Blaster

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$45.70

Supplemental Benefit Rate per Hour: \$39.69

Blaster (Hydraulic)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$46.49

Supplemental Benefit Rate per Hour: \$39.69

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 PREVAILING WAGE SCHEDULE

Blaster - Trac Drill Hydraulic

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$41.20
Supplemental Benefit Rate per Hour: \$39.69

Blaster - Wagon: Air Trac: Quarry Bar: Drillrunners

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$40.44
Supplemental Benefit Rate per Hour: \$39.69

Blaster - Operators of Jack Hammers

Chippers: Spaders: Concrete Breakers: and all other pneumatic tools of like usage: Walk Behind Self Propelled Hydraulic Asphalt and Concrete Breakers: Hydro (Water) Demolition

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$39.43
Supplemental Benefit Rate per Hour: \$39.69

Blaster - Powder Carriers

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$35.66
Supplemental Benefit Rate per Hour: \$39.69

Blaster - Hydraulic Trac Drill Chuck Tender

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$34.42
Supplemental Benefit Rate per Hour: \$39.69

Blaster - Chuck Tender & Nipper

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$33.69
Supplemental Benefit Rate per Hour: \$39.69

Blaster - Magazine Keepers: (Watch Person)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$20.30
Supplemental Benefit Rate per Hour: \$39.69

Overtime Description

Magazine Keepers:

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Time and one half for work performed in excess of forty (40) hours per week and for work performed on Saturdays, Sundays and Holidays.

All Other Employees:

Time and one-half for the first eight hours of work on Saturday and for Make-up Time. Double time for all hours over eight Monday through Friday (except make-up hours) and for all hours worked on Sunday and Holidays.

Overtime

Double time the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Presidential Election Day

Thanksgiving Day

Christmas Day

Paid Holidays

None

Shift Rates

Single shift shall be 8 hours plus an unpaid lunch, starting at 8:00 A.M (or between 6:00 A.M. and 10:00 A.M. on weekdays). When two (2) shifts are employed, each shift shall be 8 hours plus ½ hour unpaid lunch. When three (3) shifts are employed, each shift will work seven and one-half (7 ½) hours, but will be paid for eight (8) hours, since only one-half (½) hour is allowed for mealtime. When two (2) or more shifts are employed, single time will be paid for each shift. The first 8 hours of any and all work performed Monday through Friday inclusive of any off-shift shall be at the single time rate.

(Local #29)

BOILERMAKER

Boilermaker

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$50.45

Supplemental Benefit Rate per Hour: \$41.31.

Supplemental Note: For time and one half overtime - \$61.37; For double overtime - \$81.43.

Overtime Description

For Repair and Maintenance work:

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Double time the regular rate for Sunday.
For New Construction work:
Double time the regular rate after an 8 hour day.
Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
President's Day
Memorial Day
Independence Day
Columbus Day
Election Day
Veteran's Day
Thanksgiving Day
Christmas Day

Quadruple time the regular rate for work on the following holiday(s).
Labor Day

Paid Holidays

Good Friday
Day after Thanksgiving
Day before Christmas
Day before New Year's Day

Shift Rates

When shifts are required, the first shift shall work eight (8) hours at the regular straight-time hourly rate. The second shift shall work seven and one-half (7 ½) hours and receive eight hours at the regular straight time hourly rate plus twenty-five cents (\$0.25) per hour. The third shift shall work seven (7) hours and receive eight hours at the regular straight time hourly rate plus fifty cents (\$0.50) per hour. A thirty (30) minute lunch period shall not be considered as time worked. Work in excess of the above shall be paid overtime at the appropriate new construction work or repair work overtime wage and supplemental benefit hourly rate.

(Local #5)

BRICKLAYER

Bricklayer

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$47.78
Supplemental Benefit Rate per Hour: \$28.03

Overtime

Time and one half the regular rate after a 7 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays

None

Shift Rates

Overtime rates to be paid outside the regular scheduled work day.

(Bricklayer District Council)

CARPENTER - BUILDING COMMERCIAL

Building Commercial

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$49.88

Supplemental Benefit Rate per Hour: \$44.10

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
Washington's Birthday
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Paid Holidays

None

Shift Rates

The second shift will receive one hour at the double time rate of pay for the last hour of the shift; eight hours pay for seven hours of work, nine hours pay for eight hours of work. There must be a first shift in order to work a second shift.

(Carpenters District Council)

**CARPENTER - HEAVY CONSTRUCTION WORK
(Construction of Engineering Structures and Building Foundations)**

Heavy Construction Work

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$48.35

Supplemental Benefit Rate per Hour: \$46.12

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Presidential Election Day

Thanksgiving Day

Christmas Day

Paid Holidays

None

Shift Rates

Off shift work commencing between 5:00 P.M. and 11:00 P.M. shall work eight and one half hours allowing for one half hour for lunch. The wage rate shall be 113% of the straight time hourly wage rate.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

(Carpenters District Council)

CEMENT & CONCRETE WORKER

Cement & Concrete Worker

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$42.38

Supplemental Benefit Rate per Hour: \$26.17

Supplemental Note: \$28.92 on Saturdays; \$31.67 on Sundays & Holidays

Overtime Description

Time and one half the regular rate after 7 hour day (time and one half the regular rate after an 8 hour day when working with Dockbuilders on pile cap forms and for work below street level to the top of the foundation wall, not to exceed 2 feet or 3 feet above the sidewalk-brick shelf, when working on the foundation and structure.)

Overtime

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Presidential Election Day

Thanksgiving Day

Christmas Day

Paid Holidays

1/2 day before Christmas Day

1/2 day before New Year's Day

Shift Rates

On shift work extending over a twenty-four hour period, all shifts are paid at straight time.

(Cement Concrete Workers District Council)

CEMENT MASON

Cement Mason

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$38.88

Supplemental Benefit Rate per Hour: \$39.80

Supplemental Note: For time and one half overtime - \$49.05; For double overtime - \$58.30

Overtime Description

Time and one-half the regular rate after an 8 hour day, double time the regular rate after 10 hours. Time and one-half the regular rate on Saturday, double time the regular rate after 10 hours. Double time the regular rate on Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Presidential Election Day

Thanksgiving Day

Christmas Day

Paid Holidays

Any worker who reports to work on Christmas Eve or New Year's Eve pursuant to his employer's instruction shall be entitled to three (3) hours afternoon pay without working.

Shift Rates

For an off shift day, (work at times other than the regular 7:00 A.M. to 3:30 P.M. work day) a cement mason shall be paid at the regular hourly rate plus a 25% per hour differential. Four Days a week at Ten (10)hour day.

(Local #780)

CORE DRILLER

Core Driller

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$35.71

Supplemental Benefit Rate per Hour: \$21.69

Core Driller Helper

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$28.60

Supplemental Benefit Rate per Hour: \$21.69

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Core Driller Helper(Third year in the industry)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$25.74

Supplemental Benefit Rate per Hour: \$21.69

Core Driller Helper (Second year in the industry)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$22.88

Supplemental Benefit Rate per Hour: \$21.69

Core Driller Helper (First year in the industry)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$20.02

Supplemental Benefit Rate per Hour: \$21.69

Overtime Description

Time and one half the regular rate for work on a holiday plus Holiday pay when worked.

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Time and one half the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

Shift Rates

The shift day shall be the continuous eight and one-half (8½) hours from 6:00 A.M. to 2:30 P.M. and from 2:30 P.M. to 11:00 P.M., including one-half (½) hour of employees regular rate of pay for lunch. When two (2) or more shifts are employed, single time shall be paid for each shift, but those employees employed on a shift other than from 8:00 A.M. to 5:00 P.M. shall, in addition, receive seventy-five cents (\$0.75) per hour differential for each hour worked. When three (3) shifts are needed, each shift shall work seven and one-half (7 ½) hours paid for eight (8) hours of labor and be permitted one-half (½) hour for mealtime.

(Carpenters District Council)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

DERRICKPERSON AND RIGGER

Derrick Person & Rigger

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$42.25

Supplemental Benefit Rate per Hour: \$47.81

Supplemental Note: The above supplemental rate applies for work performed in Manhattan, Bronx, Brooklyn and Queens. \$49.23 - For work performed in Staten Island.

Overtime Description

The first two hours of overtime on weekdays and the first seven hours of work on Saturdays are paid at time and one half for wages and supplemental benefits. All additional overtimes is paid at double time for wages and supplemental benefits. Deduct \$1.42 from the Staten Island hourly benefits rate before computing overtime.

Overtime

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

Washington's Birthday

Good Friday

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

Paid Holidays

1/2 day on Christmas Eve if work is performed in the A.M.

(Local #197)

DIVER

Diver (Marine)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$61.30

Supplemental Benefit Rate per Hour: \$46.12

Diver Tender (Marine)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$43.45

Supplemental Benefit Rate per Hour: \$46.12

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Presidential Election Day

Thanksgiving Day

Christmas Day

Paid Holidays

None

Shift Rates

When three shifts are utilized each shift shall work seven and one half-hours (7 1/2 hours) and paid for 8 hours, allowing for one half hour for lunch.

(Carpenters District Council)

DOCKBUILDER - PILE DRIVER

Dockbuilder - Pile Driver

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$48.35

Supplemental Benefit Rate per Hour: \$46.12

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays

None

Shift Rates

Off shift work commencing between 5:00 P.M. and 11:00 P.M. shall work eight and one half hours allowing for one half hour for lunch. The wage rate shall be 113% of the straight time hourly wage rate.

(Carpenters District Council)

DRIVER: TRUCK (TEAMSTER)

Driver - Dump Truck

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: **\$38.86**

Supplemental Benefit Rate per Hour: **\$40.44**

Supplemental Note: Over 40 hours worked: time and one half rate \$16.94, double time rate \$22.59

Driver - Tractor Trailer

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: **\$38.88**

Supplemental Benefit Rate per Hour: **\$41.70**

Supplemental Note: For over 40 hours worked: at time and one half - \$15.90; at double time - \$21.21

Driver - Euclid & Turnapull Operator

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: **\$39.44**

Supplemental Benefit Rate per Hour: **\$41.70**

Supplemental Note: Over 40 hours worked: time and one half rate \$15.90, double time rate \$21.21

Overtime Description

For Paid Holidays: Holiday pay for all holidays shall be prorated based two hours per day for each day worked in the holiday week, not to exceed 8 hours of holiday pay. For Thanksgiving week, the prorated share shall be 5 1/3 hours of holiday pay for each day worked in Thanksgiving week.

Overtime

Time and one half the regular rate after an 8 hour day.

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§220 PREVAILING WAGE SCHEDULE

Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays

New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Driver Redi-Mix (Sand & Gravel)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$36.05

Supplemental Benefit Rate per Hour: \$38.60

Supplemental Note: Over 40 hours worked: time and one half rate \$13.53, double time rate \$18.04

Overtime Description

For Paid Holidays: Employees working two (2) days in the calendar week in which the holiday falls are to paid for these holidays, provided they shape each remaining workday during that calendar week.

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

President's Day
Columbus Day
Veteran's Day

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Triple time the regular rate for work on the following holiday(s).

New Year's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays

New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Election Day
Thanksgiving Day
Christmas Day

(Local #282)

ELECTRICIAN

(Including all low voltage cabling carrying data; video; and voice in combination with data and or video.)

Electrician "A" (Regular Day)

Effective Period: 7/1/2014 - 5/12/2015
Wage Rate per Hour: \$53.00
Supplemental Benefit Rate per Hour: \$47.54

Effective Period: 5/13/2015 - 6/30/2015
Wage Rate per Hour: \$54.00
Supplemental Benefit Rate per Hour: \$50.03

Electrician "A" (Regular Day Overtime)

Effective Period: 7/1/2014 - 5/12/2015
Wage Rate per Hour: \$79.50
Supplemental Benefit Rate per Hour: \$50.86

Effective Period: 5/13/2015 - 6/30/2015
Wage Rate per Hour: \$81.00
Supplemental Benefit Rate per Hour: \$53.41

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Electrician "A" (Day Shift)

Effective Period: 7/1/2014 - 5/12/2015
Wage Rate per Hour: \$53.00
Supplemental Benefit Rate per Hour: \$47.54

Effective Period: 5/13/2015 - 6/30/2015
Wage Rate per Hour: \$54.00
Supplemental Benefit Rate per Hour: \$50.03

Electrician "A" (Day Shift Overtime After 8 hours)

Effective Period: 7/1/2014 - 5/12/2015
Wage Rate per Hour: \$79.50
Supplemental Benefit Rate per Hour: \$50.86

Effective Period: 5/13/2015 - 6/30/2015
Wage Rate per Hour: \$81.00
Supplemental Benefit Rate per Hour: \$53.41

Electrician "A" (Swing Shift)

Effective Period: 7/1/2014 - 5/12/2015
Wage Rate per Hour: \$62.19
Supplemental Benefit Rate per Hour: \$54.07

Effective Period: 5/13/2015 - 6/30/2015
Wage Rate per Hour: \$63.36
Supplemental Benefit Rate per Hour: \$56.94

Electrician "A" (Swing Shift Overtime After 7.5 hours)

Effective Period: 7/1/2014 - 5/12/2015
Wage Rate per Hour: \$93.29
Supplemental Benefit Rate per Hour: \$57.97

Effective Period: 5/13/2015 - 6/30/2015
Wage Rate per Hour: \$95.04
Supplemental Benefit Rate per Hour: \$60.91

Electrician "A" (Graveyard Shift)

Effective Period: 7/1/2014 - 5/12/2015
Wage Rate per Hour: \$69.66
Supplemental Benefit Rate per Hour: \$59.59

Effective Period: 5/13/2015 - 6/30/2015
Wage Rate per Hour: \$70.97

Supplemental Benefit Rate per Hour: \$62.78

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Electrician "A" (Graveyard Shift Overtime After 7 hours)

Effective Period: 7/1/2014 - 5/12/2015

Wage Rate per Hour: \$104.49

Supplemental Benefit Rate per Hour: \$63.96

Effective Period: 5/13/2015 - 6/30/2015

Wage Rate per Hour: \$106.46

Supplemental Benefit Rate per Hour: \$67.23

Overtime

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on a holiday.

New Year's Day

Martin Luther King Jr. Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Paid Holidays

None

Shift Rates

When so elected by the Employer, one or more shifts of at least five days duration may be scheduled as follows:

Day Shift: 8:00 am to 4:30 pm, Swing Shift 4:30 pm to 12:30 am, Graveyard Shift: 12:30 am to 8:00 am.

For multiple shifts of temporary light and/or power, the temporary light and/or power employee shall be paid for 8 hours at the straight time rate. For three or less workers performing 8 hours temporary light and/or power the supplemental benefit rate is \$23.63. Effective 5/13/2015 - \$24.39.

Electrician "M" (First 8 hours)

"M" rated work shall be defined as jobbing: electrical work of limited duration and scope, also consisting of repairs and/or replacement of electrical and tele-data equipment. Includes all work necessary to retrofit, service, maintain and repair all kinds of lighting fixtures and local lighting controls and washing and cleaning of foregoing fixtures.

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Effective Period: 7/1/2014 - 5/12/2015

Wage Rate per Hour: \$27.00

Supplemental Benefit Rate per Hour: \$20.32

First and Second Year "M" Wage Rate Per Hour - Hired on or before 5/10/07: \$26.30

First and Second Year "M" Supplemental Rate- Hired on or before 5/10/07: \$19.96

First and Second Year "M" Wage Rate Per Hour - Hired after 5/10/07: \$22.50

First and Second Year "M" Supplemental Rate- Hired after 5/10/07: \$18.06

Effective Period: 5/13/2015 - 6/30/2015

Wage Rate per Hour: \$27.50

Supplemental Benefit Rate per Hour: \$20.82

First and Second Year "M" Wage Rate Per Hour - Hired on or before 5/10/07: \$26.80

First and Second Year "M" Supplemental Rate- Hired on or before 5/10/07: \$20.46

First and Second Year "M" Wage Rate Per Hour - Hired after 5/10/07: \$23.00

First and Second Year "M" Supplemental Rate- Hired after 5/10/07: \$18.56

Electrician "M" (Overtime After First 8 hours)

"M" rated work shall be defined as jobbing: electrical work of limited duration and scope, also consisting of repairs and/or replacement of electrical and tele-data equipment. Includes all work necessary to retrofit, service, maintain and repair all kinds of lighting fixtures and local lighting controls and washing and cleaning of foregoing fixtures.

Effective Period: 7/1/2014 - 5/12/2015

Wage Rate per Hour: \$40.50

Supplemental Benefit Rate per Hour: \$22.01

First and Second Year "M" Wage Rate Per Hour - Hired on or before 5/10/07: \$39.45

First and Second Year "M" Supplemental Rate- Hired on or before 5/10/07: \$21.61

First and Second Year "M" Wage Rate Per Hour - Hired after 5/10/07: \$33.75

First and Second Year "M" Supplemental Rate- Hired after 5/10/07: \$19.47

Effective Period: 5/13/2015 - 6/30/2015

Wage Rate per Hour: \$41.25

Supplemental Benefit Rate per Hour: \$22.54

First and Second Year "M" Wage Rate Per Hour - Hired on or before 5/10/07: \$40.20

First and Second Year "M" Supplemental Rate- Hired on or before 5/10/07: \$22.14

First and Second Year "M" Wage Rate Per Hour - Hired after 5/10/07: \$34.50

First and Second Year "M" Supplemental Rate- Hired after 5/10/07: \$20.00

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

Martin Luther King Jr. Day

President's Day

Memorial Day

Independence Day

Labor Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 PREVAILING WAGE SCHEDULE

Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays

None

(Local #3)

ELECTRICIAN - ALARM TECHNICIAN

(Scope of Work - Inspect, test, repair, and replace defective, malfunctioning, or broken devices, components and controls of Fire, Burglar and Security Systems)

Alarm Technician

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$30.40

Supplemental Benefit Rate per Hour: \$13.90

Supplemental Note: \$12.40 only after 8 hours worked in a day

Overtime Description

Time and one half the regular rate for work on the following holidays: Columbus Day, Veterans Day, Day after Thanksgiving.

Double time the regular rate for work on the following holidays: New Year's day, Martin Luther King Jr. Day, President's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day.

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Paid Holidays

New Year's Day
Martin Luther King Jr. Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

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§220 PREVAILING WAGE SCHEDULE

Shift Rates

Night Differential is based upon a ten percent (10%) differential between the hours of 4:00 P.M. and 12:30 A.M. and a fifteen percent (15%) differential for the hours 12:00 A.M. to 8:00 A.M.

Vacation

At least 1 year of employment.....ten (10) days
5 years or more of employment.....fifteen (15) days
10 years of employment.....twenty (20) days
Plus one Personal Day per year

Sick Days:
One day per Year

(Local #3)

ELECTRICIAN-STREET LIGHTING WORKER

Electrician - Electro Pole Electrician

Effective Period: 7/1/2014 - 5/19/2015
Wage Rate per Hour: \$53.00
Supplemental Benefit Rate per Hour: \$49.34

Effective Period: 5/20/2015 - 6/30/2015
Wage Rate per Hour: \$54.00
Supplemental Benefit Rate per Hour: \$51.86

Electrician - Electro Pole Foundation Installer

Effective Period: 7/1/2014 - 5/19/2015
Wage Rate per Hour: \$40.18
Supplemental Benefit Rate per Hour: \$37.73

Effective Period: 5/20/2015 - 6/30/2015
Wage Rate per Hour: \$40.93
Supplemental Benefit Rate per Hour: \$39.46

Electrician - Electro Pole Maintainer

Effective Period: 7/1/2014 - 5/19/2015
Wage Rate per Hour: \$34.40
Supplemental Benefit Rate per Hour: \$34.00

Effective Period: 5/20/2015 - 6/30/2015
Wage Rate per Hour: \$35.05
Supplemental Benefit Rate per Hour: \$35.51

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Overtime Description

Electrician - Electro Pole Electrician: Time and one half the regular rate after a 7 hour day and after 5 consecutive days worked per week.

Electrician - Electro Pole Foundation Installer: Time and one half the regular rate after 8 hours within a 24 hour period and Saturday and Sunday.

Electrician - Electro Pole Maintainer: Time and one half the regular rate after a 7 hour day and after 5 consecutive days worked per week. Saturdays and Sundays may be used as a make-up day at straight time when a day is lost during the week to inclement weather.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

Martin Luther King Jr. Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Paid Holidays

None

(Local #3)

ELEVATOR CONSTRUCTOR

Elevator Constructor

Effective Period: 7/1/2014 - 3/16/2015

Wage Rate per Hour: \$58.23

Supplemental Benefit Rate per Hour: \$29.47

Effective Period: 3/17/2015 - 6/30/2015

Wage Rate per Hour: \$59.55

Supplemental Benefit Rate per Hour: \$31.07

Overtime Description

For New Construction: work performed after 7 or 8 hour day, Saturday, Sunday or between 4:30pm and 7:00am shall be paid at double time rate.

Existing buildings: work performed after an 8 hour day, Saturday, Sunday or between 5:30pm and 7:00 am shall be paid time and one half.

Overtime

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Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Vacation

Employer contributes 8% of regular basic hourly rate as vacation pay for employees with more than 15 years of service, and 6% for employees with 5 to 15 years of service, and 4% for employees with less than 5 years of service.

(Local #1)

ELEVATOR REPAIR & MAINTENANCE

Elevator Service/Modernization Mechanic

Effective Period: 7/1/2014 - 3/16/2015

Wage Rate per Hour: \$46.00

Supplemental Benefit Rate per Hour: \$28.78

Effective Period: 3/17/2015 - 6/30/2015

Wage Rate per Hour: \$46.92

Supplemental Benefit Rate per Hour: \$30.91

Overtime Description

For Service Work: Double time - all work performed on Sundays, Holidays, and between midnight and 7:00am.

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Time and one half the regular rate for work on a holiday plus the day's pay.

Paid Holidays

New Year's Day
President's Day
Good Friday
Memorial Day
Independence Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Shift Rates

For Modernization Work (4pm to 12:30am) - regularly hourly rate plus a (15%) fifteen percent differential.

Vacation

Employer contributes 8% of regular basic hourly rate as vacation pay for employees with more than 15 years of service, and 6% for employees with 5 to 15 years of service, and 4% for employees with less than 5 years of service.

(Local #1)

ENGINEER

Engineer - Heavy Construction Operating Engineer I

Cherry pickers 20 tons and over and Loaders (rubber tired and/or tractor type with a manufacturer's minimum rated capacity of six cubic yards and over).

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: **\$61.05**

Supplemental Benefit Rate per Hour: **\$31.93**

Supplemental Note: \$57.46 on overtime

Shift Wage Rate: **\$97.68**

Engineer - Heavy Construction Operating Engineer II

Backhoes, Basin Machines, Groover, Mechanical Sweepers, Bobcat, Boom Truck, Barrier Transport (Barrier Mover) & machines of similar nature. Operation of Churn Drills and machines of a similar nature, Stetco Silent Hoist and machines of similar nature, Vac-Alls, Meyers Machines, John Beam and machines of a similar nature, Ross Carriers and Travel Lifts and machines of a similar nature, Bulldozers, Scrapers and Turn-a-Pulls: Tugger Hoists (Used exclusively for handling excavated material); Tractors with attachments, Hyster and Roustabout Cranes, Cherry pickers. Austin Western, Grove and machines of a similar nature, Scoopmobiles, Monorails, Conveyors, Trenchers: Loaders-Rubber Tired and Tractor: Barber Greene and Eimco Loaders and Eimco Backhoes; Mighty Midget and similar breakers and Tampers, Curb and Gutter Pavers and Motor Patrol, Motor Graders and all machines of a similar nature. Locomotives 10 Tons or under. Mini-Max, Break-Tech and machines of a similar nature; Milling machines, robotic and demolition machines and machines of a similar nature, shot blaster, skid steer machines and machines of a similar nature including bobcat, pile rig rubber-tired excavator (37,000 lbs. and under), 2 man auger.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: **\$59.24**

Supplemental Benefit Rate per Hour: **\$31.93**

Supplemental Note: \$57.46 on overtime

Shift Wage Rate: **\$94.78**

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Engineer - Heavy Construction Operating Engineer III

Minor Equipment such as Tractors, Post Hole Diggers, Ditch Witch (Walk Behind), Road Finishing Machines, Rollers five tons and under, Tugger Hoists, Dual Purpose Trucks, Fork Lifts, and Dempsey Dumpers, Fireperson.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$56.22

Supplemental Benefit Rate per Hour: \$31.93

Supplemental Note: \$57.46 on overtime

Shift Wage Rate: \$89.95

Engineer - Heavy Construction Maintenance Engineer I

Installing, Repairing, Maintaining, Dismantling and Manning of all equipment including Steel Cutting, Bending and Heat Sealing Machines, Mechanical Heaters, Grout Pumps, Bentonite Pumps & Plants, Screening Machines, Fusion Coupling Machines, Tunnel Boring Machines Moles and Machines of a similar nature, Power Packs, Mechanical Hydraulic Jacks; all drill rigs including but not limited to Churn, Rotary Caisson, Raised Bore & Drills of a similar nature; Personnel, Inspection & Safety Boats or any boats used to perform functions of same, Mine Hoists, Whirlies, all Climbing Cranes, all Tower Cranes, including but not limited to Truck Mounted and Crawler Type and machines of similar nature; Maintaining Hydraulic Drills and machines of a similar nature; Well Point System-Installation and dismantling; Burning, Welding, all Pumps regardless of size and/or motor power, except River Cofferdam Pumps and Wells Point Pumps; Motorized Buggies (three or more); equipment used in the cleaning and televising of sewers, but not limited to jet-rodder/vacuum truck, vacall/vactor, closed circuit television inspection equipment; high powered water pumps, jet pumps; screed machines and concrete finishing machines of a similar nature; vermeers.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$58.97

Supplemental Benefit Rate per Hour: \$31.93

Supplemental Note: \$57.46 on overtime

Shift Wage Rate: \$94.35

Engineer - Heavy Construction Maintenance Engineer II

On Base Mounted Tower Cranes

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$77.30

Supplemental Benefit Rate per Hour: \$31.93

Supplemental Note: \$57.46 on overtime

Shift Wage Rate: \$123.68

Engineer - Heavy Construction Maintenance Engineer III

On Generators, Light Towers

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$39.10

Supplemental Benefit Rate per Hour: \$31.93

Supplemental Note: \$57.46 on overtime

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Shift Wage Rate: \$62.56

Engineer - Heavy Construction Maintenance Engineer IV

On Pumps and Mixers including mud sucking

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$40.11

Supplemental Benefit Rate per Hour: \$31.93

Supplemental Note: \$57.46 on overtime

Shift Wage Rate: \$64.18

Engineer - Heavy Construction Oilers I

Gradalls, Cold Planer Grader, Concrete Pumps, Driving Truck Cranes, Driving and Operating Fuel and Grease Trucks.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$53.22

Supplemental Benefit Rate per Hour: \$31.93

Supplemental Note: \$57.46 on overtime

Shift Wage Rate: \$85.15

Engineer - Heavy Construction Oilers II

All gasoline, electric, diesel or air operated Shovels, Draglines, Backhoes, Keystones, Pavers, Gunitite Machines, Battery of Compressors, Crawler Cranes, two-person Trenching Machines.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$36.97

Supplemental Benefit Rate per Hour: \$31.93

Supplemental Note: \$57.46 on overtime

Shift Wage Rate: \$59.15

Engineer - Steel Erection Maintenance Engineers

Derrick, Travelers, Tower, Crawler Tower and Climbing Cranes

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$57.05

Supplemental Benefit Rate per Hour: \$31.93

Supplemental Note: \$57.46 on overtime

Shift Wage Rate: \$91.28

Engineer - Steel Erection Oiler I

On a Truck Crane

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$53.43

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: \$31.93
Supplemental Note: \$57.46 on overtime
Shift Wage Rate: \$85.49

Engineer - Steel Erection Oiler II

On a Crawler Crane

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$40.84
Supplemental Benefit Rate per Hour: \$31.93
Supplemental Note: \$57.46 on overtime
Shift Wage Rate: \$65.34

Overtime Description

On jobs of more than one shift, if the next shift employee fails to report for work through any cause over which the employer has no control, the employee on duty who works the next shift continues to work at the single time rate.

Overtime

Double time the regular rate after an 8 hour day.
Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.
Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day
Lincoln's Birthday
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

Engineer - Building Work Maintenance Engineers I

Installing, repairing, maintaining, dismantling (of all equipment including: Steel Cutting and Bending Machines, Mechanical Heaters, Mine Hoists, Climbing Cranes, Tower Cranes, Linden Peine, Lorain, Liebherr, Mannes, or machines of a similar nature, Well Point Systems, Deep Well Pumps, Concrete Mixers with loading Device, Concrete Plants, Motor Generators when used for temporary power and lights), skid steer machines of a similar nature including bobcat.

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$54.04

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: \$31.93
Supplemental Note: \$57.46 on overtime

Engineer - Building Work Maintenance Engineers II

On Pumps, Generators, Mixers and Heaters

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$42.10
Supplemental Benefit Rate per Hour: \$31.93
Supplemental Note: \$57.46 on overtime

Engineer - Building Work Oilers I

All gasoline, electric, diesel or air operated Gradealls: Concrete Pumps, Overhead Cranes in Power Houses: Their duties shall be to assist the Engineer in oiling, greasing and repairing of all machines; Driving Truck Cranes: Driving and Operating Fuel and Grease Trucks, Cherrypickers (hydraulic cranes) over 70,000 GVW, and machines of a similar nature.

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$51.40
Supplemental Benefit Rate per Hour: \$31.93
Supplemental Note: \$57.46 on overtime

Engineer - Building Work Oilers II

Oilers on Crawler Cranes, Backhoes, Trenching Machines, Gunite Machines, Compressors (three or more in Battery).

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$38.31
Supplemental Benefit Rate per Hour: \$31.93
Supplemental Note: \$57.46 on overtime

Overtime Description

On jobs of more than one shift, if an Employee fails to report for work through any cause over which the Employer has no control, the Employee on duty will continue to work at the rate of single time.

Overtime

Double time the regular rate after an 8 hour day.
Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.
Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day
Lincoln's Birthday
President's Day
Memorial Day
Independence Day
Labor Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 PREVAILING WAGE SCHEDULE

Columbus Day
Veteran's Day
Thanksgiving Day
Christmas Day

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

Shift Rates

Off Shift: double time the regular hourly rate.

(Local #15)

ENGINEER - CITY SURVEYOR AND CONSULTANT

Party Chief

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$35.55

Supplemental Benefit Rate per Hour: \$17.65

Instrument Person

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$29.41

Supplemental Benefit Rate per Hour: \$17.65

Rodperson

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$25.54

Supplemental Benefit Rate per Hour: \$17.65

Overtime Description

Overtime Benefit Rate - \$23.63 per hour (time & one half) \$29.95 per hour (double time).

Time and one half the regular rate after an 8 hour day, Time and one half the regular rate for Saturday for the first eight hours worked, Double time the regular time rate for Saturday for work performed in excess of eight hours, Double time the regular rate for Sunday and Double time the regular rate for work on a holiday.

Paid Holidays

New Year's Day
Lincoln's Birthday
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Christmas Day

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

(Operating Engineer Local #15-D)

ENGINEER - FIELD (BUILDING CONSTRUCTION)
(Construction of Building Projects, Concrete Superstructures, etc.)

Field Engineer - BC Party Chief

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$55.40

Supplemental Benefit Rate per Hour: \$30.62

Supplemental Note: Overtime Benefit Rate - \$42.73 per hour (time & one half) \$54.84 per hour (double time).

Field Engineer - BC Instrument Person

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$43.10

Supplemental Benefit Rate per Hour: \$30.62

Supplemental Note: Overtime Benefit Rate - \$42.73 per hour (time & one half) \$54.84 per hour (double time).

Field Engineer - BC Rodperson

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$27.96

Supplemental Benefit Rate per Hour: \$30.62

Supplemental Note: Overtime Benefit Rate - \$42.73 per hour (time & one half) \$54.84 per hour (double time).

Overtime Description

Time and one half the regular rate after a 7 hour work and time and one half the regular rate for Saturday for the first seven hours worked, Double time the regular time rate for Saturday for work performed in excess of seven hours, Double time the regular rate for Sunday and Double time the regular rate for work on a holiday.

Paid Holidays

New Year's Day

President's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Christmas Day

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

(Operating Engineer Local #15-D)

ENGINEER - FIELD (HEAVY CONSTRUCTION)
(Construction of Roads, Tunnels, Bridges, Sewers, Building Foundations,
Engineering Structures etc.)

Field Engineer - HC Party Chief

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$62.61

Supplemental Benefit Rate per Hour: \$30.62

Supplemental Note: Overtime benefit rate - \$42.73 per hour (time & one half), \$54.84 per hour (double time).

Field Engineer - HC Instrument Person

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$46.00

Supplemental Benefit Rate per Hour: \$30.62

Supplemental Note: Overtime benefit rate - \$42.73 per hour (time & one half), \$54.84 per hour (double time).

Field Engineer - HC Rodperson

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$38.61

Supplemental Benefit Rate per Hour: \$30.62

Supplemental Note: Overtime benefit rate - \$42.73 per hour (time & one half), \$54.84 per hour (double time).

Overtime Description

Time and one half the regular rate after an 8 hour day, Time and one half the regular rate for Saturday for the first eight hours worked, Double time the regular time rate for Saturday for work performed in excess of eight hours, Double time the regular rate for Sunday and Double time the regular rate for work on a holiday.

Paid Holidays

New Year's Day

Lincoln's Birthday

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Christmas Day

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

(Operating Engineer Local #15-D)

ENGINEER - FIELD (STEEL ERECTION)

Field Engineer - Steel Erection Party Chief

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$58.50

Supplemental Benefit Rate per Hour: \$30.62

Supplemental Note: Overtime benefit rate - \$42.73 per hour (time & one half), \$54.84 per hour (double time).

Field Engineer - Steel Erection Instrument Person

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$45.53

Supplemental Benefit Rate per Hour: \$30.62

Supplemental Note: Overtime benefit rate - \$42.73 per hour (time & one half), \$54.84 per hour (double time).

Field Engineer - Steel Erection Rodperson

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$30.43

Supplemental Benefit Rate per Hour: \$30.62

Supplemental Note: Overtime benefit rate - \$42.73 per hour (time & one half), \$54.84 per hour (double time).

Overtime Description

Time and one half the regular rate for Saturday for the first eight hours worked.

Double time the regular rate for Saturday for work performed in excess of eight hours.

Overtime

Time and one half the regular rate after an 8 hour day.

Double time the regular rate for Sunday.

Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day

Lincoln's Birthday

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Christmas Day

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 PREVAILING WAGE SCHEDULE

(Operating Engineer Local #15-D)

ENGINEER - OPERATING

Operating Engineer - Road & Heavy Construction I

Back Filling Machines, Cranes, Mucking Machines and Dual Drum Paver.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$67.70

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$108.32

Operating Engineer - Road & Heavy Construction II

Backhoes, Power Shovels, Hydraulic Clam Shells, Steel Erection, Moles and machines of a similar nature.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$70.10

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: 51.75 overtime hours

Shift Wage Rate: \$112.16

Operating Engineer - Road & Heavy Construction III

Mine Hoists, Cranes, etc. (Used as Mine Hoists)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$72.34

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$115.74

Operating Engineer - Road & Heavy Construction IV

Gradealls, Keystones, Cranes on land or water (with digging buckets), Bridge Cranes, Vermeer Cutter and machines of a similar nature, Trenching Machines.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$70.63

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$113.01

Operating Engineer - Road & Heavy Construction V

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Pile Drivers & Rigs (employing Dock Builder foreperson): Derrick Boats, Tunnel Shovels.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$69.23

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$110.77

Operating Engineer - Road & Heavy Construction VI

Mixers (Concrete with loading attachment), Concrete Pavers, Cableways, Land Derricks, Power Houses (Low Air Pressure Units).

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$65.76

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$105.22

Operating Engineer - Road & Heavy Construction VII

Barrier Movers , Barrier Transport and Machines of a Similar Nature.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$53.08

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$84.93

Operating Engineer - Road & Heavy Construction VIII

Utility Compressors

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$41.18

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$51.93

Operating Engineer - Road & Heavy Construction IX

Horizontal Boring Rig

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$62.53

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$100.05

Operating Engineer - Road & Heavy Construction X

Elevators (manually operated as personnel hoist).

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$57.46

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$91.94

Operating Engineer - Road & Heavy Construction XI

Compressors (Portable 3 or more in battery), Driving of Truck Mounted Compressors, Well-point Pumps, Tugger Machines Well Point Pumps, Churn Drill.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$44.63

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$71.41

Operating Engineer - Road & Heavy Construction XII

All Drills and Machines of a similar nature.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$66.45

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$106.32

Operating Engineer - Road & Heavy Construction XIII

Concrete Pumps, Concrete Plant, Stone Crushers, Double Drum Hoist, Power Houses (other than above).

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$64.34

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$102.94

Operating Engineer - Road & Heavy Construction XIV

Concrete Mixer

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$61.53

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$98.45

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Operating Engineer - Road & Heavy Construction XV

Compressors (Portable Single or two in Battery, not over 100 feet apart), Pumps (River Cofferdam) and Welding Machines, Push Button Machines, All Engines Irrespective of Power (Power-Pac) used to drive auxiliary equipment, Air, Hydraulic, etc.

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$41.44
Supplemental Benefit Rate per Hour: \$28.60
Supplemental Note: \$51.75 overtime hours
Shift Wage Rate: \$66.30

Operating Engineer - Road & Heavy Construction XVI

Concrete Breaking Machines, Hoists (Single Drum), Load Masters, Locomotives (over ten tons) and Dinkies over ten tons, Hydraulic Crane-Second Engineer.

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$58.74
Supplemental Benefit Rate per Hour: \$28.60
Supplemental Note: \$51.85 overtime hours
Shift Wage Rate: \$93.98

Operating Engineer - Road & Heavy Construction XVII

On-Site concrete plant engineer, On-site Asphalt Plant Engineer, and Vibratory console.

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$59.21
Supplemental Benefit Rate per Hour: \$28.60
Supplemental Note: \$51.75 overtime hours
Shift Wage Rate: \$94.74

Operating Engineer - Road & Heavy Construction XVIII

Tower Crane

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$85.00
Supplemental Benefit Rate per Hour: \$28.60
Supplemental Note: \$51.75 overtime hours
Shift Wage Rate: \$136.00

Operating Engineer - Paving I

Asphalt Spreaders, Autogrades (C.M.I.), Roto/Mil

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$65.76

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Supplemental Benefit Rate per Hour: \$28.60
Supplemental Note: \$51.75 overtime hours
Shift Wage Rate: \$105.22

Operating Engineer - Paving II

Asphalt Roller

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$64.04
Supplemental Benefit Rate per Hour: \$28.60
Supplemental Note: \$51.75 overtime hours
Shift Wage Rate: \$102.46

Operating Engineer - Paving III

Asphalt Plants

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$54.17
Supplemental Benefit Rate per Hour: \$28.60
Supplemental Note: \$51.75 overtime hours
Shift Wage Rate: \$86.67

Operating Engineer - Concrete I

Cranes

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$70.32
Supplemental Benefit Rate per Hour: \$28.60
Supplemental Note: \$51.75 overtime hours

Operating Engineer - Concrete II

Compressors

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$41.76
Supplemental Benefit Rate per Hour: \$28.60
Supplemental Note: \$51.75 overtime hours

Operating Engineer - Concrete III

Micro-traps (Negative Air Machines), Vac-All Remediation System.

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$56.16
Supplemental Benefit Rate per Hour: \$28.60
Supplemental Note: \$51.75 overtime hours

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
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Operating Engineer - Steel Erection I

Three Drum Derricks

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$73.37

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$117.39

Operating Engineer - Steel Erection II

Cranes, 2 Drum Derricks, Hydraulic Cranes, Fork Lifts and Boom Trucks.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$70.50

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$112.80

Operating Engineer - Steel Erection III

Compressors, Welding Machines.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$41.84

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$66.94

Operating Engineer - Steel Erection IV

Compressors - Not Combined with Welding Machine.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$39.85

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$63.76

Operating Engineer - Building Work I

Forklifts, Plaster (Platform machine), Plaster Bucket, Concrete Pump and all other equipment used for hoisting material.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$57.82

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Operating Engineer - Building Work II

Compressors, Welding Machines (Cutting Concrete-Tank Work), Paint Spraying, Sandblasting, Pumps (with the exclusion of Concrete Pumps), All Engines irrespective of Power (Power-Pac) used to drive Auxiliary Equipment, Air, Hydraulic, Jacking System, etc.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$43.28

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Operating Engineer - Building Work III

Double Drum

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$65.83

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Operating Engineer - Building Work IV

Stone Derrick, Cranes, Hydraulic Cranes Boom Trucks.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$69.74

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Operating Engineer - Building Work V

Dismantling and Erection of Cranes, Relief Engineer.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$64.26

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Operating Engineer - Building Work VI

4 Pole Hoist, Single Drum Hoists.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$63.58

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Operating Engineer - Building Work VII

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
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Rack & Pinion and House Cars

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$50.53

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

For New House Car projects started after 7/1/11 only: Wage Rate per Hour \$40.31

Overtime Description

On jobs of more than one shift, if an Employee fails to report for work through any cause over which the Employer has no control, the Employee on duty will continue to work at the rate of single time.

For House Cars and Rack & Pinion only: Overtime paid at time and one-half for all hours in excess of eight hours in a day, Saturday, Sunday and Holidays worked.

Overtime

Double time the regular rate after an 8 hour day.

Double time the regular time rate for Saturday.

Double time the regular rate for Sunday.

Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day

Lincoln's Birthday

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

Shift Rates

For Steel Erection Only: Shifts may be worked at the single time rate at other than the regular working hours (8:00 A.M. to 4:30 P.M.) on the following work ONLY: Heavy construction jobs on work below the street level, over railroad tracks and on building jobs.

(Operating Engineer Local #14)

FLOOR COVERER

(Interior vinyl composition tile, sheath vinyl linoleum and wood parquet tile including site preparation and synthetic turf not including site preparation)

Floor Coverer

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
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Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$49.88

Supplemental Benefit Rate per Hour: \$44.10

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Presidential Election Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Paid Holidays

1/2 day on Christmas Eve if work is performed in the A.M.

1/2 day on New Year's Eve if work is performed in the A.M.

Shift Rates

Two shifts may be utilized with the first shift working 8:00 A.M. to the end of the shift at the straight time of pay. The second shift will receive one hour at double time rate for the last hour of the shift. (eight for seven, nine for eight).

(Carpenters District Council)

GLAZIER

(New Construction, Remodeling, and Alteration)

Glazier

Effective Period: 7/1/2014 - 10/31/2014

Wage Rate per Hour: \$42.50

Supplemental Benefit Rate per Hour: \$35.09

Supplemental Note: Supplemental Benefit Overtime Rate: \$43.59

Effective Period: 11/1/2014 - 6/30/2015

Wage Rate per Hour: \$42.85

Supplemental Benefit Rate per Hour: \$35.59

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 PREVAILING WAGE SCHEDULE

Supplemental Note: Supplemental Benefit Overtime Rate: \$44.09

Overtime Description

An optional 8th hour can be worked at straight time rate. If 9th hour is worked, then both hours or more (8th & 9th or more) will be at the double time rate of pay.

Overtime

Double time the regular rate after a 7 hour day.
Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays

None

Shift Rates

Shifts shall be any 7 hours beyond 4:00 P.M. for which the glazier shall receive 8 hours pay for 7 hours worked.

(Local #1281)

GLAZIER - REPAIR & MAINTENANCE

(For the Installation of Glass - All repair and maintenance work on a particular building, whenever performed, where the total cumulative contract value is under \$105,000. Except where enumerated (i.e. plate glass windows) does not apply to non-residential buildings.)

Craft Jurisdiction for repair, maintenance and fabrication

Plate glass replacement, Residential glass replacement, Residential mirrors and shower doors, Storm windows and storm doors, Residential replacement windows, Herculite door repairs, Door closer repairs, Retrofit apartment house (non commercial buildings), Glass tinting.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$23.60

Supplemental Benefit Rate per Hour: \$19.04

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Overtime

- Time and one half the regular rate after an 8 hour day.
- Double time the regular rate for Sunday.
- Time and one half the regular hourly rate after 40 hours in any work week.

Paid Holidays

- New Year's Day
- President's Day
- Memorial Day
- Independence Day
- Labor Day
- Thanksgiving Day
- Day after Thanksgiving
- Christmas Day

(Local #1281)

HEAT AND FROST INSULATOR

Heat & Frost Insulator

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$56.98

Supplemental Benefit Rate per Hour: \$34.81

Overtime Description

Double time shall be paid for supplemental benefits during overtime work.
8th hour paid at time and one half.

Overtime

- Double time the regular rate after an 8 hour day.
- Double time the regular time rate for Saturday.
- Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

- New Year's Day
- Martin Luther King Jr. Day
- President's Day
- Memorial Day
- Independence Day
- Columbus Day
- Veteran's Day
- Thanksgiving Day
- Day after Thanksgiving
- Christmas Day

Triple time the regular rate for work on the following holiday(s).

- Labor Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Paid Holidays

None

Shift Rates

The first shift shall work seven hours at the regular straight time rate. The second and third shift shall work seven hours the regular straight time hourly rate plus a fourteen percent wage and benefit premium. Off hour work in occupied or retail buildings may be worked on weekdays with an increment of \$1.00 per hour and eight hours pay for seven (7) hours worked. Double time will apply for over seven (7) hours worked on weekdays, weekends or holidays.

(Local #12)

**HOUSE WRECKER
(TOTAL DEMOLITION)**

House Wrecker - Tier A

On all work sites the first, second, eleventh and every third House Wrecker thereafter will be Tier A House Wreckers (i.e. 1st, 2nd, 11th, 14th etc). Other House Wreckers may be Tier B House Wreckers.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$34.51

Supplemental Benefit Rate per Hour: \$25.59

House Wrecker - Tier B

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$24.02

Supplemental Benefit Rate per Hour: \$19.12

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Paid Holidays

None

(Mason Tenders District Council)

IRON WORKER - ORNAMENTAL

Iron Worker - Ornamental

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$42.70

Supplemental Benefit Rate per Hour: \$45.77

Supplemental Note: Supplemental benefits are to be paid at the applicable overtime rate when overtime is in effect.

Overtime Description

Time and one half the regular rate after a 7 hour day for a maximum of two hours on any regular work day (the 8th and 9th hour) and double time shall be paid for all work on a regular work day thereafter, time and one half the regular rate for Saturday for the first seven hours of work and double time shall be paid for all work on a Saturday thereafter.

Overtime

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

Paid Holidays

None

Shift Rates

For off shift work - 8 hours pay for 7 hours of work. When two or three shifts are employed on a job, Monday through Friday, the workday for each shift shall be seven hours and paid for ten and one-half hours at the single time rate. When two or three shifts are worked on Saturday, Sunday or holidays, each shift shall be seven hours and paid fifteen and three-quarters hours.

(Local #580)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

IRON WORKER - STRUCTURAL

Iron Worker - Structural

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$47.75

Supplemental Benefit Rate per Hour: \$65.35

Supplemental Note: Supplemental benefits are to be paid at the applicable overtime rate when overtime is in effect.

Overtime Description

Monday through Friday- the first eight hours are paid at straight time, the 9th and 10th hours are paid at time and one-half the regular rate, all additional weekday overtime is paid at double the regular rate. Saturdays- the first eight hours are paid at time and one-half the regular rate, double time thereafter. Sunday-all shifts are paid at double time.

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

Paid Holidays

1/2 day on Christmas Eve if work is performed in the A.M.

1/2 day on New Year's Eve if work is performed in the A.M.

Shift Rates

Monday through Friday - First Shift: First eight hours are paid at straight time, the 9th & 10th hours are paid at time and a half, double time paid thereafter. Second and third Shifts: First eight hours are paid at time and one-half, double time thereafter. Saturdays: All shifts, first eight hours paid at time and one-half, double time thereafter: Sunday all shifts are paid at double time.

(Local #40 & #361)

LABORER

(Foundation, Concrete, Excavating, Street Pipe Layer and Common)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 PREVAILING WAGE SCHEDULE

aborer

Excavation and foundation work for buildings, heavy construction, engineering work, and hazardous waste removal in connection with the above work. Landscaping tasks in connection with heavy construction work, engineering work and building projects. Projects include, but are not limited to, pollution plants, sewers, parks, subways, bridges, highways, etc.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$39.85

Supplemental Benefit Rate per Hour: \$34.88

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Presidential Election Day

Thanksgiving Day

Christmas Day

aid Holidays

Labor Day

Thanksgiving Day

Shift Rates

When two shifts are employed, single time rate shall be paid for each shift. When three shifts are found necessary, each shift shall work seven and one half hours (7 ½), but shall be paid for eight (8) hours of labor, and be permitted one half hour for lunch.

(Local #731)

LANDSCAPING

(Landscaping tasks, as well as tree pruning, tree removing, spraying and maintenance in connection with the planting of street trees and the planting of trees in city parks but not when such activities are performed as part of, or in connection with, other construction or reconstruction projects.)

Landscaper (Above 6 years experience)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$25.75
Supplemental Benefit Rate per Hour: \$13.80

Landscaper (3 - 6 years experience)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$24.75
Supplemental Benefit Rate per Hour: \$13.80

Landscaper (up to 3 years experience)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$22.25
Supplemental Benefit Rate per Hour: \$13.80

Groundperson

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$22.25
Supplemental Benefit Rate per Hour: \$13.80

Tree Remover / Pruner

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$30.75
Supplemental Benefit Rate per Hour: \$13.80

Landscaper Sprayer (Pesticide Applicator)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$20.75
Supplemental Benefit Rate per Hour: \$13.80

Watering - Plant Maintainer

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$15.75
Supplemental Benefit Rate per Hour: \$13.80

Overtime Description

For all overtime work performed, supplemental benefits shall include an additional seventy-five (\$0.75) cents per hour.

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Time and one half the regular rate for work on a holiday plus the day's pay.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Paid Holidays

New Year's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Shift Rates

Work performed on a 4pm to 12am shift has a 15% differential. Work performed on a 12am to 8am shift has a 20% differential.

(Local #175)

MARBLE MECHANIC

Marble Setter

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$50.85

Supplemental Benefit Rate per Hour: \$34.21

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$51.15

Supplemental Benefit Rate per Hour: \$34.87

Marble Finisher

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$39.99

Supplemental Benefit Rate per Hour: \$33.34

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$40.26

Supplemental Benefit Rate per Hour: \$33.90

Marble Polisher

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$35.96

Supplemental Benefit Rate per Hour: \$25.92

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$36.25

Supplemental Benefit Rate per Hour: \$26.28

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Overtime Description

Supplemental Benefit contributions are to be made at the applicable overtime rates. Time and one half the regular rate after a 7 hour day or time and one half the regular rate after an 8 hour day - chosen by Employer at the start of the project and then would last for the full duration of the project.

Overtime

Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays

None

(Local #7)

MASON TENDER

Mason Tender

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$36.05

Supplemental Benefit Rate per Hour: \$26.74

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
President's Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays
None

Shift Rates

The Employer may work two (2) shifts with the first shift at the straight time wage rate and the second shift receiving eight (8) hours paid for seven (7) hours work at the straight time wage rate.

(Local #79)

MASON TENDER (INTERIOR DEMOLITION WORKER)

(The erection, building, moving, servicing and dismantling of enclosures, scaffolding, barricades, protection and site safety structures etc., on Interior Demolition jobs.)

Mason Tender Tier A

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$34.99

Supplemental Benefit Rate per Hour: \$21.10

Mason Tender Tier B

On Interior Demolition job sites 33 1/3 % of the employees shall be classified as Tier A Interior Demolition Workers and 66 2/3 % shall be classified as Tier B Interior Demolition Workers; provided that the employer may employ more than 33 1/3 % Tier A Interior Demolition Workers on the job site. Where the number of employees on a job site is not divisible by 3, the first additional employee (above the number of employees divisible by three) shall be a Tier B Interior Demolition Worker, and the second additional employee shall be a Tier A Interior Demolition Worker.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$24.18

Supplemental Benefit Rate per Hour: \$15.42

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays

None

(Local #79)

METALLIC LATHER

Metallic Lather

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$42.03

Supplemental Benefit Rate per Hour: \$41.07

Supplemental Note: Supplemental benefits for overtime are paid at the appropriate overtime rate.

Overtime Description

Overtime would be time and one half the regular rate after a seven (7) or eight (8) hours workday, which would be set at the start of the job.

Overtime

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
Washington's Birthday
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays

1/2 day on Christmas Eve if work is performed in the A.M.

1/2 day on New Year's Eve if work is performed in the A.M.

Shift Rates

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

There shall be either two (2) or three (3) shifts, each shift shall be eight (8) hours with nine (9) hours pay, including one half (½) hour for lunch. Off-Hour Start shall commence after 3:30 P.M. and shall conclude by 6:00 A.M. The first consecutive seven (7) hours shall be at straight time with a differential of twelve dollars (\$12.00) per hour. Fringes shall be paid at the straight time rate.

(Local #46)

MILLWRIGHT

Millwright

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$48.44

Supplemental Benefit Rate per Hour: \$50.52

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Presidential Election Day

Thanksgiving Day

Christmas Day

Paid Holidays

1/2 day on Christmas Eve if work is performed in the A.M.

1/2 day on New Year's Eve if work is performed in the A.M.

Shift Rates

The first shift shall receive the straight time rate of pay. The second shift receives the straight time rate of pay plus fifteen (15%) per cent. Members of the second shift shall be allowed one half hour to eat, with this time being included in the hours of the workday established. There must be a first shift to work a second shift. All additional hours worked shall be paid at the time and one-half rate of pay plus fifteen (15%) per cent for weekday hours.

(Local #740)

MOSAIC MECHANIC

Mosaic Mechanic - Mosaic & Terrazzo Mechanic

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$45.23

Supplemental Benefit Rate per Hour: \$36.59

Supplemental Note: Supplemental benefits for overtime to be paid at the rate of \$47.56 per hour.

Mosaic Mechanic - Mosaic & Terrazzo Finisher

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$43.63

Supplemental Benefit Rate per Hour: \$36.57

Supplemental Note: Supplemental benefits for overtime to be paid at the rate of \$47.54 per hour.

Mosaic Mechanic - Machine Operator Grinder

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$43.63

Supplemental Benefit Rate per Hour: \$36.57

Supplemental Note: Supplemental benefits for overtime to be paid at the rate of \$47.54 per hour.

Overtime

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

Washington's Birthday

Good Friday

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Paid Holidays

None

(Local #7)

PAINTER

Painter - Brush & Roller

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$39.50

Supplemental Benefit Rate per Hour: \$26.12

Supplemental Note: \$30.75 on overtime

Spray & Scaffold / Decorative / Sandblast

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$42.50

Supplemental Benefit Rate per Hour: \$26.12

Supplemental Note: \$30.75 on overtime

Overtime

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Thanksgiving Day

Christmas Day

Paid Holidays

None

(District Council of Painters #9)

PAINTER - SIGN

Designer

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$36.15

Supplemental Benefit Rate per Hour: \$9.66

Journeyman

PUBLISH DATE: 7/1/2014

EFFECTIVE PERIOD: JULY 1, 2014 THROUGH JUNE 30, 2015

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§220 PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$33.62

Supplemental Benefit Rate per Hour: \$9.56

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Election Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Shift Rates

All work performed outside the regular 8 hour work day (either 7:00 A.M to 3:30 P.M or 8:00 A.M. to 4:30 P.M) shall be paid at time and one half the regular hourly rate.

(Local #8A-28A)

PAINTER - STRIPER

Striper (paint)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$34.00

Supplemental Benefit Rate per Hour: \$12.60

Supplemental Note: Overtime Supplemental Benefit rate - \$8.35 New Hire Rate (0-3 months) - \$0.00

Lineperson (thermoplastic)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$38.00

Supplemental Benefit Rate per Hour: \$12.60

Supplemental Note: Overtime Supplemental Benefit rate - \$8.35; New Hire Rate (0-3 months) - \$0.00

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 PREVAILING WAGE SCHEDULE

Double time the regular rate for Sunday.
Time and one half the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Shift Rates

Employees hired before April 1, 2003: 15% night shift premium differential for work commenced at 9:00 PM or later.

Vacation

Employees with one to two years service shall accrue vacation based on hours worked: 250 hours worked - 1 day vacation; 500 hours worked - 2 days vacation; 750 hours worked - 3 days vacation; 900 hours worked - 4 days vacation; 1,000 hours worked - 5 days vacation. Employees with two to five years service receive two weeks vacation. Employees with five to twenty years service receive three weeks vacation. Employees with twenty to twenty-five years service receive four weeks vacation. Employees with 25 or more years service receive five weeks vacation. Vacation must be taken during winter months. 2 Personal Days except employees hired after 4/1/12 who do not have 2 years of service.

(Local #917)

PAINTER - STRUCTURAL STEEL

Painters on Structural Steel

Effective Period: 7/1/2014 - 9/30/2014

Wage Rate per Hour: \$47.00

Supplemental Benefit Rate per Hour: \$33.58

Effective Period: 10/1/2014 - 6/30/2015

Wage Rate per Hour: \$48.75

Supplemental Benefit Rate per Hour: \$34.58

Painter - Power Tool

Effective Period: 7/1/2014 - 9/30/2014

Wage Rate per Hour: \$53.00

Supplemental Benefit Rate per Hour: \$33.58

Effective Period: 10/1/2014 - 6/30/2015

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Wage Rate per Hour: \$54.75

Supplemental Benefit Rate per Hour: \$34.58

Overtime Description

Supplemental Benefits shall be paid for each hour worked, up to forty (40) hours per week for the period of May 1st to November 15th or up to fifty (50) hours per week for the period of November 16th to April 30th.

Overtime

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

Paid Holidays

None

Shift Rates

Regular hourly rates plus a ten per cent (10%) differential

(Local #806)

PAPERHANGER

Paperhanger

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$41.08

Supplemental Benefit Rate per Hour: \$29.23

Supplemental Note: Supplemental benefits are to be paid at the appropriate straight time and overtime rate.

Overtime

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

President's Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays

None

Shift Rates

Evening shift - 4:30 P.M. to 12:00 Midnight (regular rate of pay); any work performed before 7:00 A.M. shall be at time and one half the regular base rate of pay.

(District Council of Painters #9)

PAVER AND ROADBUILDER

Paver & Roadbuilder - Formsetter

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$44.19

Supplemental Benefit Rate per Hour: \$35.15

Paver & Roadbuilder - Laborer

Paving and road construction work, regardless of material used, including but not limited to preparation of job sites, removal of old surfaces, asphalt and/or concrete, by whatever method, including but not limited to milling; laying of concrete; laying of asphalt for temporary, patchwork, and utility paving (but not production paving); site preparation and incidental work before the installation of rubberized materials and similar surfaces; installation and repair of temporary construction fencing; slurry seal coating, maintenance of safety surfaces; play equipment installation, and other related work.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$40.32

Supplemental Benefit Rate per Hour: \$35.15

Production Paver & Roadbuilder - Screed Person

(Production paving is asphalt paving when using a paving machine or on a project where a paving machine is traditionally used)

Adjustment of paving machinery on production paving jobs.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$45.24

Supplemental Benefit Rate per Hour: \$35.15

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Production Paver & Roadbuilder - Raker

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$44.73

Supplemental Benefit Rate per Hour: \$35.15

Production Paver & Roadbuilder - Shoveler

General laborer (except removal of surfaces - see Paver and Roadbuilder-Laborer) including but not limited to tamper, AC paint and liquid tar work.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$41.44

Supplemental Benefit Rate per Hour: \$35.15

Overtime Description

Veteran's Day is a Paid Holiday for employees working on production paving.

If an employee works New Year's Day or Christmas Day, they receive the single time rate plus 25%.

Employees who work on a holiday listed below receive the straight time rate plus one day's pay for the holiday.

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Paid Holidays

Memorial Day

Independence Day

Labor Day

Presidential Election Day

Thanksgiving Day

Shift Rates

When two shifts are employed, the work period for each shift shall be a continuous eight (8) hours. When three shifts are employed, each shift will work seven and one half (7 ½) hours but will be paid for eight (8) hours since only one half (1/2) hour is allowed for meal time.

When two or more shifts are employed, single time will be paid for each shift.

Night Work - On night work, the first eight (8) hours of work will be paid for at the single time rate, except that production paving work shall be paid at 15% over the single time rate for the screed person, rakers and shovelers directly involved only. All other workers will be exempt. Hours worked over eight (8) hours during said shift shall be paid for at the time and one-half rate.

(Local #1010)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 PREVAILING WAGE SCHEDULE

PLASTERER

Plasterer

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$42.43

Supplemental Benefit Rate per Hour: \$27.95

Overtime

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

Martin Luther King Jr. Day

President's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Presidential Election Day

Thanksgiving Day

Christmas Day

Paid Holidays

None

Shift Rates

When it is not possible to conduct alteration work during regular work hours, in a building occupied by tenants, said work shall proceed on a shift basis: however work over seven (7) hours in any twenty four (24) hour period, the time after seven (7) hours shall be considered overtime.

The second shift shall start at a time between 3:30 p.m. and 7:00 p.m. and shall consist of seven (7) working hours and shall receive eight (8) hours of wages and benefits at the straight time rate. The workers on the second shift shall be allowed one-half (1/2) hour to eat with this time being included in the seven (7) hours of work.

(Local #530)

PLASTERER - TENDER

Plasterer - Tender

Effective Period: 7/1/2014 - 6/30/2015

PUBLISH DATE: 7/1/2014

EFFECTIVE PERIOD: JULY 1, 2014 THROUGH JUNE 30, 2015

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OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Wage Rate per Hour: \$35.53

Supplemental Benefit Rate per Hour: \$26.31

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

Washington's Birthday

Memorial Day

Independence Day

Labor Day

Presidential Election Day

Thanksgiving Day

Christmas Day

Paid Holidays

None

Shift Rates

When work commences outside regular work hours, workers receive an hour additional (differential) wage and supplement payment. Eight hours pay for seven hours work or nine hours pay for eight hours work.

(Mason Tenders District Council)

PLUMBER

Plumber

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$65.27

Supplemental Benefit Rate per Hour: \$25.78

Supplemental Note: Overtime supplemental benefit rate per hour: \$40.78

Plumber - Temporary Services

Temporary Services - When there are no Plumbers on the job site, there may be three shifts designed to cover the entire twenty-four hour period, including weekends if necessary, at the following rate straight time.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$52.24

Supplemental Benefit Rate per Hour: \$20.20

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 PREVAILING WAGE SCHEDULE

Overtime Description

Double time the regular rate after a 7 hour day - unless for new construction site work where the plumbing contract price is \$1.5 million or less, the hours of labor can be 8 hours per day at the employers option. On Alteration jobs when other mechanical trades at the site are working an eighth hour at straight time, then the plumber shall also work an eighth hour at straight time.

Overtime

Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Shift Rates

Shift work, when directly specified in public agency or authority documents where plumbing contract is \$8 million or less, will be permitted. 30% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shifts Monday to Friday. 50% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shift work performed on weekends. For shift work on holidays, double time wages and fringe benefits shall be paid.

(Plumbers Local #1)

PLUMBER (MECHANICAL EQUIPMENT AND SERVICE)
(Mechanical Equipment and Service work shall include any repair and/or replacement of the present plumbing system.)

Plumber

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$38.27

Supplemental Benefit Rate per Hour: \$12.84

Overtime

Time and one half the regular rate after an 8-hour day.
Time and one half the regular rate for Saturday.
Time and one half the regular rate for Sunday.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day
President's Day
Memorial Day
Independence Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays

None

(Plumbers Local # 1)

**PLUMBER (RESIDENTIAL RATES FOR 1, 2 AND 3 FAMILY HOME
CONSTRUCTION)**

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$45.19

Supplemental Benefit Rate per Hour: \$18.79

Overtime

Double time the regular rate after an 8 hour day.
Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays

None

Shift Rates

30% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shifts Monday to Friday.
50% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shift work performed on weekends. For shift work on holidays, double time wages and fringe benefits shall be paid.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

(Plumbers Local #1)

PLUMBER: PUMP & TANK
Oil Trades (Installation and Maintenance)

Plumber - Pump & Tank

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$62.83

Supplemental Benefit Rate per Hour: \$21.37

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Paid Holidays

None

Shift Rates

All work outside the regular workday (8:00 A.M. to 3:30 P.M.) is to be paid at time and one half the regular hourly rate

(Plumbers Local #1)

POINTER - WATERPROOFER, CAULKER MECHANIC (EXTERIOR BUILDING RENOVATION)

Pointer - Waterproofer, Caulker Mechanic

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OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$47.41

Supplemental Benefit Rate per Hour: \$24.40

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

Martin Luther King Jr. Day

President's Day

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

Paid Holidays

None

Shift Rates

All work outside the regular work day (an eight hour workday between the hours of 6:00 A.M. and 4:30 P.M.) is to be paid at time and one half the regular rate.

(Bricklayer District Council)

ROOFER

Roofer

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$40.70

Supplemental Benefit Rate per Hour: \$28.67

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 PREVAILING WAGE SCHEDULE

President's Day
Memorial Day
Independence Day
Labor Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays

None

Shift Rates

Second shift - Regular hourly rate plus a 10% differential. Third shift - Regular hourly rate plus a 15% differential.

(Local #8)

**SANDBLASTER - STEAMBLASTER
(Exterior Building Renovation)**

Sandblaster / Steamblaster

Effective Period: 7/1/2014 - 6/30/2015

Base Rate per Hour: \$47.41

Supplemental Benefit Rate per Hour: \$24.40

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

Martin Luther King Jr. Day

President's Day

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

Paid Holidays

None

Shift Rates

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OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

All work outside the regular work day (an eight hour workday between the hours of 6:00 A.M. and 4:30 P.M.) is to be paid at time and one half the regular rate.

(Bricklayer District Council)

SHEET METAL WORKER

Sheet Metal Worker

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$46.21

Supplemental Benefit Rate per Hour: \$43.89

Supplemental Note: Supplemental benefit contributions are to be made at the applicable overtime rates.

Sheet Metal Worker - Fan Maintenance

(The temporary operation of fans or blowers in new or existing buildings for heating and/or ventilation, and/or air conditioning prior to the completion of the project.)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$36.97

Supplemental Benefit Rate per Hour: \$43.89

Sheet Metal Worker - Duct Cleaner

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$12.90

Supplemental Benefit Rate per Hour: \$8.07

Overtime

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

Martin Luther King Jr. Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 PREVAILING WAGE SCHEDULE

Paid Holidays

None

Shift Rates

Work that can only be performed outside regular working hours (seven hours of work between 7:30 A.M. and 3:30 P.M.) - First shift (work between 3:30 P.M. and 11:30 P.M.) - 10% differential above the established hourly rate.
Second shift (work between 11:30 P.M. and 7:30 A.M.) - 15% differential above the established hourly rate.

For Fan Maintenance: On all full shifts of fan maintenance work the straight time hourly rate of pay will be paid for each shift, including nights, Saturdays, Sundays, and holidays. No journey person engaged in fan maintenance shall work in excess of forty (40) hours in any work week.

(Local #28)

**SHEET METAL WORKER - SPECIALTY
(Decking & Siding)**

Sheet Metal Specialty Worker

The first worker to perform this work must be paid at the rate of the Sheet Metal Worker. The second and third workers shall be paid the Specialty Worker Rate. The ratio of One Sheet Metal Worker, then Two Specialty workers shall be utilized thereafter.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$40.78

Supplemental Benefit Rate per Hour: \$23.38

Supplemental Note: Supplemental benefit contributions are to be made at the applicable overtime rates.

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

Martin Luther King Jr. Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Christmas Day

Paid Holidays

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§220 PREVAILING WAGE SCHEDULE

None

(Local #28)

SHIPYARD WORKER

Shipyard Mechanic - First Class

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$23.83
Supplemental Benefit Rate per Hour: \$2.87

Shipyard Mechanic - Second Class

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$15.44
Supplemental Benefit Rate per Hour: \$2.54

Shipyard Laborer - First Class

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$19.28
Supplemental Benefit Rate per Hour: \$2.69

Shipyard Laborer - Second Class

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$12.36
Supplemental Benefit Rate per Hour: \$2.43

Shipyard Dockhand - First Class

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$22.68
Supplemental Benefit Rate per Hour: \$2.82

Shipyard Dockhand - Second Class

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$14.22
Supplemental Benefit Rate per Hour: \$2.50

Overtime Description

Work performed on holiday is paid double time the regular hourly wage rate plus holiday pay.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Overtime

- Time and one half the regular rate after an 8 hour day.
- Time and one half the regular rate for Saturday.
- Double time the regular rate for Sunday.
- Time and one half the regular hourly rate after 40 hours in any work week.

Paid Holidays

- New Year's Day
- Martin Luther King Jr. Day
- President's Day
- Good Friday
- Memorial Day
- Independence Day
- Labor Day
- Thanksgiving Day
- Day after Thanksgiving
- Christmas Day

Based on Survey Data

SIGN ERECTOR
(Sheet Metal, Plastic, Electric, and Neon)

Sign Erector

- Effective Period: 7/1/2014 - 6/30/2015
- Wage Rate per Hour: \$44.20
- Supplemental Benefit Rate per Hour: \$44.10

Overtime

- Time and one half the regular rate after a 7 hour day.
- Time and one half the regular rate for Saturday.
- Time and one half the regular rate for Sunday.
- Time and one half the regular rate for work on the following holiday(s).

Paid Holidays

- New Year's Day
 - Washington's Birthday
 - Memorial Day
 - Independence Day
 - Labor Day
 - Columbus Day
 - Election Day
 - Thanksgiving Day
 - Day after Thanksgiving
 - Christmas Day
-

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Shift Rates

Time and one half the regular hourly rate is to be paid for all hours worked outside the regular workday either (7:00 A.M. through 2:30 P.M.) or (8:00 A.M. through 3:30 P.M.)

(Local #137)

STEAMFITTER

Steamfitter I

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$53.25

Supplemental Benefit Rate per Hour: \$51.04

Supplemental Note: Overtime supplemental benefit rate: \$101.34

Overtime

Double time the regular rate after a 7 hour day.

Double time the regular time rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Paid Holidays

None

Shift Rates

Work performed between 3:30 P.M. and 7:00 A.M. and on Saturdays, Sundays and Holidays shall be at double time the regular hourly rate and paid at the overtime supplemental benefit rate above.

Steamfitter II

For heating, ventilation, air conditioning and mechanical public works contracts with a dollar value not to exceed \$15,000,000 and for fire protection/sprinkler public works contracts not to exceed \$1,500,000.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$53.25

Supplemental Benefit Rate per Hour: \$51.04

Supplemental Note: Overtime supplemental benefit rate: \$101.34

Overtime

Double time the regular rate after an 8 hour day.

Double time the regular time rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Paid Holidays

None

Shift Rates

May be performed outside of the regular workday except Saturday, Sunday and Holidays. A shift shall consist of eight working hours. All work performed in excess of eight hours shall be paid at double time. No shift shall commence after 7:00 P.M. on Friday or 7:00 P.M. the day before holidays. All work performed after 12:01 A.M. Saturday or 12:01 A.M. the day before a Holiday will be paid at double time. When shift work is performed the wage rate for regular time worked is a thirty percent premium together with fringe benefits.

On Transit Authority projects, where work is performed in the vicinity of tracks all shift work on weekends and holidays may be performed at the regular shift rates.

Local #638

STEAMFITTER - REFRIGERATION AND AIR CONDITIONER (Maintenance and Installation Service Person)

Refrigeration and Air Conditioner Mechanic

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$38.30

Supplemental Benefit Rate per Hour: \$12.76

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Refrigeration and Air Conditioner Service Person V

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$31.47
Supplemental Benefit Rate per Hour: \$11.55

Refrigeration and Air Conditioner Service Person IV

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$26.07
Supplemental Benefit Rate per Hour: \$10.52

Refrigeration and Air Conditioner Service Person III

Filter changing and maintenance thereof, oil and greasing, tower and coil cleaning, scraping and painting, general housekeeping, taking of water samples.

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$22.38
Supplemental Benefit Rate per Hour: \$9.76

Refrigeration and Air Conditioner Service Person II

Filter changing and maintenance thereof, oil and greasing, tower and coil cleaning, scraping and painting, general housekeeping, taking of water samples.

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$18.56
Supplemental Benefit Rate per Hour: \$9.06

Refrigeration and Air Conditioner Service Person I

Filter changing and maintenance thereof, oil and greasing, tower and coil cleaning, scraping and painting, general housekeeping, taking of water samples.

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$13.57
Supplemental Benefit Rate per Hour: \$8.30

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).
New Year's Day
Independence Day
Labor Day
Veteran's Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Thanksgiving Day
Christmas Day

Double time and one half the regular rate for work on the following holiday(s).

Martin Luther King Jr. Day
President's Day
Memorial Day
Columbus Day

Paid Holidays

New Year's Day
Martin Luther King Jr. Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Christmas Day

(Local #638B)

STONE MASON - SETTER

Stone Mason - Setters

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$46.56

Supplemental Benefit Rate per Hour: \$36.40

Overtime

Time and one half the regular rate after a 7 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
Washington's Birthday
Good Friday
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays

1/2 day on Christmas Eve if work is performed in the A.M.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Shift Rates

For all work outside the regular workday (8:00 A.M. to 3:30 P.M. Monday through Friday), the pay shall be straight time plus a ten percent (10%) differential.

(Bricklayers District Council)

TAPER

Drywall Taper

Effective Period: 7/1/2014 - 12/30/2014

Wage Rate per Hour: \$45.32

Supplemental Benefit Rate per Hour: \$22.66

Effective Period: 12/31/2014 - 6/30/2015

Wage Rate per Hour: \$45.82

Supplemental Benefit Rate per Hour: \$22.66

Overtime

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

Martin Luther King Jr. Day

President's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Thanksgiving Day

Christmas Day

Paid Holidays

Any worker who reports to work on Christmas Eve or New Year's Eve pursuant to his employer's instruction shall be entitled to three (3) hours afternoon pay without working.

Shift Rates

Time and one half the regular rate outside the regular work hours (8:00 A.M. through 3:30 P.M.)

(Local #1974)

**TELECOMMUNICATION WORKER
(Voice Installation Only)**

Telecommunication Worker

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$39.18

Supplemental Benefit Rate per Hour: \$13.19

Supplemental Note: The above rate applies for Manhattan, Bronx, Brooklyn, Queens. \$12.64 for Staten Island only.

Overtime

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

Lincoln's Birthday

Washington's Birthday

Memorial Day

Independence Day

Labor Day

Columbus Day

Election Day

Veteran's Day

Thanksgiving Day

Christmas Day

Paid Holidays

New Year's Day

Lincoln's Birthday

Washington's Birthday

Memorial Day

Independence Day

Labor Day

Columbus Day

Election Day

Veteran's Day

Thanksgiving Day

Christmas Day

Employees have the option of observing either Martin Luther King's Birthday or the day after Thanksgiving instead of Lincoln's Birthday

Shift Rates

For any workday that starts before 8A.M. or ends after 6P.M. there is a 10% differential for the applicable worker's hourly rate.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Vacation

After 6 months.....one week.
After 12 months but less than 7 years.....two weeks.
After 7 or more but less than 15 years.....three weeks.
After 15 years or more but less than 25 years.....four weeks.

(C.W.A.)

TILE FINISHER

Tile Finisher

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$38.80
Supplemental Benefit Rate per Hour: \$28.03

Overtime

Time and one half the regular rate after a 7 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

- New Year's Day
- President's Day
- Good Friday
- Memorial Day
- Independence Day
- Labor Day
- Columbus Day
- Veteran's Day
- Thanksgiving Day
- Day after Thanksgiving
- Christmas Day

Paid Holidays

None

Shift Rates

Off shift work day (work performed outside the regular 8:00 A.M. to 3:30 P.M. workday): shift differential of one and one quarter (1¼) times the regular straight time rate of pay for the seven hours of actual off-shift work.

(Local #7)

TILE LAYER - SETTER

Tile Layer - Setter

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$49.88

Supplemental Benefit Rate per Hour: \$32.36

Overtime

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Shift Rates

Off shift work day (work performed outside the regular 8:00 A.M. to 3:30 P.M. workday): shift differential of one and one quarter (1¼) times the regular straight time rate of pay for the seven hours of actual off-shift work.

(Local #7)

TIMBERPERSON

Timberperson

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$44.33

Supplemental Benefit Rate per Hour: \$45.39

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Time and one half the regular hourly rate after 40 hours in any work week.

Overtime Holidays

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§220 PREVAILING WAGE SCHEDULE

Double time the regular rate for work on the following holiday(s).

New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays

None

Shift Rates

Off shift work commencing between 5:00 P.M. and 11:00 P.M. shall work eight and one half hours allowing for one half hour for lunch. The wage rate shall be 113% of the straight time hourly wage rate.

(Local #1536)

TUNNEL WORKER

Blasters, Mucking Machine Operators (Compressed Air Rates)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$54.20
Supplemental Benefit Rate per Hour: \$48.20

Tunnel Workers (Compressed Air Rates)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$52.31
Supplemental Benefit Rate per Hour: \$46.59

Top Nipper (Compressed Air Rates)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$51.35
Supplemental Benefit Rate per Hour: \$45.78

Outside Lock Tender, Outside Gauge Tender, Muck Lock Tender (Compressed Air Rates)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$50.42
Supplemental Benefit Rate per Hour: \$44.91

Bottom Bell & Top Bell Signal Person: Shaft Person (Compressed Air Rates)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$50.42
Supplemental Benefit Rate per Hour: \$44.92

Changehouse Attendant: Powder Watchperson (Compressed Air Rates)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$43.94
Supplemental Benefit Rate per Hour: \$42.55

Blasters (Free Air Rates)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$51.72
Supplemental Benefit Rate per Hour: \$46.03

Tunnel Workers (Free Air Rates)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$49.48
Supplemental Benefit Rate per Hour: \$44.06

I Others (Free Air Rates)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$45.73
Supplemental Benefit Rate per Hour: \$40.75

Microtunneling (Free Air Rates)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$39.58
Supplemental Benefit Rate per Hour: \$35.25

Overtime Description

For Repair-Maintenance Work on Existing Equipment and Facilities - Time and one half the regular rate after a 7 hour day, or for Saturday, or for Sunday. Double time the regular rate for work on a holiday.
For Small-Bore Micro Tunneling Machines - Time and one-half the regular rate shall be paid for all overtime.

Overtime

Double time the regular rate after an 8 hour day.
Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.
Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Lincoln's Birthday
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Election Day
Veteran's Day
Thanksgiving Day
Christmas Day

(Local #147)

**WELDER
TO BE PAID AT THE RATE OF THE JOURNEYPERSON IN THE TRADE
PERFORMING THE WORK.**

OFFICE OF THE COMPTROLLER

CITY OF NEW YORK

220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

APPENDIX

Pursuant to Labor Law §220 (3-e), only apprentices who are individually registered in a bona fide program to which the employer contractor is a participant and registered with the New York State Department of Labor, may be employed on a public work project.

Any employee listed on a payroll at an apprentice wage rate, who is not registered as above, shall be paid the journey person wage rate for the classification of work he actually performed.

Apprentice ratios are established to ensure the proper safety, training and supervision of apprentices. A ratio establishes the number of journey workers required for each apprentice in a program and on a job site. Ratios are interpreted as follows: in the case of a 1:1, 1:4 ratio, there must be one journey worker for the first apprentice, and four additional journey workers for each subsequent apprentice.

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ASBESTOS HANDLER

(Ratio of Apprentice Journeyperson: 1 to 1, 1 to 3)

Asbestos Handler (First 1000 Hours)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 78% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$15.45

Asbestos Handler (Second 1000 Hours)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$15.45

Asbestos Handler (Third 1000 Hours)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 83% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$15.45

Asbestos Handler (Fourth 1000 Hours)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 89% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$15.45

(Local #78)

BOILERMAKER

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Boilermaker (First Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$29.74

Boilermaker (Second Year: 1st Six Months)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$31.40

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Boilermaker (Second Year: 2nd Six Months)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$33.05

Boilermaker (Third Year: 1st Six Months)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 80% of Journeyperson's rat
Supplemental Benefit Rate Per Hour: \$34.69

Boilermaker (Third Year: 2nd Six Months)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 85% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$36.34

Boilermaker (Fourth Year: 1st Six Months)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 90% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$38.00

Boilermaker (Fourth Year: 2nd Six Months)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 95% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$39.65

(Local #5)

BRICKLAYER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Bricklayer (First 750 Hours)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$17.10

Bricklayer (Second 750 Hours)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 60% of Journeyperson's rate

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate Per Hour: \$17.10

Bricklayer (Third 750 Hours)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 70% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$17.10

Bricklayer (Fourth 750 Hours)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 80% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$17.10

Bricklayer (Fifth 750 Hours)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 90% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$17.10

Bricklayer (Sixth 750 Hours)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 95% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$17.10

Bricklayer District Council)

CARPENTER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

Carpenter (First Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 40% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$30.25

Carpenter (Second Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$30.25

Carpenter (Third Year)

Effective Period: 7/1/2014 - 6/30/2015

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Wage Rate Per Hour: 65% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$30.25

Carpenter (Fourth Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 80% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$30.25

(Carpenters District Council)

CEMENT MASON
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

Cement Mason (First Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 50% of Journeyman's Rate

Cement Mason (Second Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 60% of Journeyman's Rate

Cement Mason (Third Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 70% of Journeyman's Rate

(Local #780)

CEMENT AND CONCRETE WORKER
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

Cement & Concrete Worker (0 - 500 hours)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$18.04

Cement & Concrete Worker (501 - 1000 hours)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$18.87

Cement & Concrete Worker (1001 - 2000 hours)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$24.25

Cement & Concrete Worker (2001 - 4000 hours)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$25.07

(Cement Concrete Workers District Council)

**DERRICKPERSON & RIGGER (STONE)
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)**

Derrickperson & Rigger (stone) - First Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: 50% of Journeyperson's rate

Derrickperson & Rigger (stone) - Second Year: 1st Six Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: 75% of Journeyperson's rate

Derrickperson & Rigger (stone) - Second Year: 2nd Six Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: 75% of Journeyperson's rate

Derrickperson & Rigger (stone) - Third Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 90% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: 75% of Journeyperson's rate

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

(Local #197)

DOCKBUILDER/PILE DRIVER
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 6)

Dockbuilder/Pile Driver (First Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 40% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$31.26

Dockbuilder/Pile Driver (Second Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$31.26

Dockbuilder/Pile Driver (Third Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 65% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$31.26

Dockbuilder/Pile Driver (Fourth Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 80% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$31.26

(Carpenters District Council)

ELECTRICIAN
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

Electrician (First Term: 0-6 Months)

Effective Period: 7/1/2014 - 5/12/2015
Wage Rate per Hour: \$12.50
Supplemental Benefit Rate per Hour: \$11.10
Overtime Supplemental Rate Per Hour: \$11.93

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 5/13/2015 - 6/30/2015

Wage Rate per Hour: \$13.00

Supplemental Benefit Rate per Hour: \$11.61

Overtime Supplemental Rate Per Hour: \$12.47

Electrician (First Term: 7-12 Months)

Effective Period: 7/1/2014 - 5/12/2015

Wage Rate per Hour: \$13.50

Supplemental Benefit Rate per Hour: \$11.62

Overtime Supplemental Rate Per Hour: \$12.51

Effective Period: 5/13/2015 - 6/30/2015

Wage Rate per Hour: \$14.00

Supplemental Benefit Rate per Hour: \$12.12

Overtime Supplemental Rate Per Hour: \$13.04

Electrician (Second Term: 0-6 Months)

Effective Period: 7/1/2014 - 5/12/2015

Wage Rate per Hour: \$14.50

Supplemental Benefit Rate per Hour: \$12.13

Overtime Supplemental Rate Per Hour: \$13.08

Effective Period: 5/13/2015 - 6/30/2015

Wage Rate per Hour: \$15.00

Supplemental Benefit Rate per Hour: \$12.63

Overtime Supplemental Rate Per Hour: \$13.62

Electrician (Second Term: 7-12 Months)

Effective Period: 7/1/2014 - 5/12/2015

Wage Rate per Hour: \$15.50

Supplemental Benefit Rate per Hour: \$12.64

Overtime Supplemental Rate Per Hour: \$13.66

Effective Period: 5/13/2015 - 6/30/2015

Wage Rate per Hour: \$16.00

Supplemental Benefit Rate per Hour: \$13.14

Overtime Supplemental Rate Per Hour: \$14.19

Electrician (Third Term: 0-6 Months)

Effective Period: 7/1/2014 - 5/12/2015

Wage Rate per Hour: \$16.50

Supplemental Benefit Rate per Hour: \$13.15

Overtime Supplemental Rate Per Hour: \$14.23

Effective Period: 5/13/2015 - 6/30/2015

Wage Rate per Hour: \$17.00

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: \$13.65
Overtime Supplemental Rate Per Hour: \$14.77

Electrician (Third Term: 7-12 Months)

Effective Period: 7/1/2014 - 5/12/2015
Wage Rate per Hour: \$17.50
Supplemental Benefit Rate per Hour: \$13.65
Overtime Supplemental Rate Per Hour: \$14.81

Effective Period: 5/13/2015 - 6/30/2015
Wage Rate per Hour: \$18.00
Supplemental Benefit Rate per Hour: \$14.16
Overtime Supplemental Rate Per Hour: \$15.34

Electrician (Fourth Term: 0-6 Months)

Effective Period: 7/1/2014 - 5/12/2015
Wage Rate per Hour: \$18.50
Supplemental Benefit Rate per Hour: \$14.16
Overtime Supplemental Rate Per Hour: \$15.38

Effective Period: 5/13/2015 - 6/30/2015
Wage Rate per Hour: \$19.00
Supplemental Benefit Rate per Hour: \$14.67
Overtime Supplemental Rate Per Hour: \$15.92

Electrician (Fourth Term: 7-12 Months)

Effective Period: 7/1/2014 - 5/12/2015
Wage Rate per Hour: \$20.50
Supplemental Benefit Rate per Hour: \$15.18
Overtime Supplemental Rate Per Hour: \$16.53

Effective Period: 5/13/2015 - 6/30/2015
Wage Rate per Hour: \$21.00
Supplemental Benefit Rate per Hour: \$15.68
Overtime Supplemental Rate Per Hour: \$17.07

Electrician (Fifth Term: 0-12 Months - Hired on or after 5/10/07)

Effective Period: 7/1/2014 - 5/12/2015
Wage Rate per Hour: \$22.50
Supplemental Benefit Rate per Hour: \$18.06
Overtime Supplemental Rate Per Hour: \$19.47

Effective Period: 5/13/2015 - 6/30/2015
Wage Rate per Hour: \$23.00
Supplemental Benefit Rate per Hour: \$18.56
Overtime Supplemental Rate Per Hour: \$20.00

Electrician (Fifth Term: 13-18 Months - Hired on or after 5/10/07)

Effective Period: 7/1/2014 - 5/12/2015
Wage Rate per Hour: \$27.00
Supplemental Benefit Rate per Hour: \$20.32
Overtime Supplemental Rate Per Hour: \$22.01

Effective Period: 5/13/2015 - 6/30/2015
Wage Rate per Hour: \$27.50
Supplemental Benefit Rate per Hour: \$20.82
Overtime Supplemental Rate Per Hour: \$22.54

Electrician (Fifth Term: 0-18 Months - Hired before 5/10/07)

Effective Period: 7/1/2014 - 5/12/2015
Wage Rate per Hour: \$26.30
Supplemental Benefit Rate per Hour: \$19.96
Overtime Supplemental Rate Per Hour: \$21.61

Effective Period: 5/13/2015 - 6/30/2015
Wage Rate per Hour: \$26.80
Supplemental Benefit Rate per Hour: \$20.46
Overtime Supplemental Rate Per Hour: \$22.14

Overtime Description

Overtime Wage paid at time and one half the regular rate
For "A" rated Apprentices (work in excess of 7 hours per day)
For "M" rated Apprentices (work in excess of 8 hours per day)

(Local #3)

ELEVATOR CONSTRUCTOR
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 2)

Elevator (Constructor) - First Year

Effective Period: 7/1/2014 - 3/16/2015
Wage Rate Per Hour: 50% of Journeyman's rate
Supplemental Rate Per Hour: \$25.46

Effective Period: 3/17/2015 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyman's rate
Supplemental Rate Per Hour: \$26.94

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Elevator (Constructor) - Second Year

Effective Period: 7/1/2014 - 3/16/2015
Wage Rate Per Hour: 55% of Journeyman's rate
Supplemental Rate Per Hour: \$25.86

Effective Period: 3/17/2015 - 6/30/2015
Wage Rate Per Hour: 55% of Journeyman's rate
Supplemental Rate Per Hour: \$27.35

Elevator (Constructor) - Third Year

Effective Period: 7/1/2014 - 3/16/2015
Wage Rate Per Hour: 65% of Journeyman's rate
Supplemental Rate Per Hour: \$26.66

Effective Period: 3/17/2015 - 6/30/2015
Wage Rate Per Hour: 65% of Journeyman's rate
Supplemental Rate Per Hour: \$28.17

Elevator (Constructor) - Fourth Year

Effective Period: 7/1/2014 - 3/16/2015
Wage Rate Per Hour: 75% of Journeyman's rate
Supplemental Rate Per Hour: \$27.46

Effective Period: 3/17/2015 - 6/30/2015
Wage Rate Per Hour: 75% of Journeyman's rate
Supplemental Rate Per Hour: \$29.00

(Local #1)

ELEVATOR REPAIR & MAINTENANCE
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 2)

Elevator Service/Modernization Mechanic (First Year)

Effective Period: 7/1/2014 - 3/16/2015
Wage Rate Per Hour: 50% of Journeyman's rate
Supplemental Benefit Per Hour: \$24.85

Effective Period: 3/17/2015 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyman's rate
Supplemental Benefit Per Hour: \$26.87

Elevator Service/Modernization Mechanic (Second Year)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 3/16/2015
Wage Rate Per Hour: 55% of Journeyman's rate
Supplemental Benefit Per Hour: \$25.24

Effective Period: 3/17/2015 - 6/30/2015
Wage Rate Per Hour: 55% of Journeyman's rate
Supplemental Benefit Per Hour: \$27.27

Elevator Service/Modernization Mechanic (Third Year)

Effective Period: 7/1/2014 - 3/16/2015
Wage Rate Per Hour: 65% of Journeyman's rate
Supplemental Benefit Per Hour: \$26.02

Effective Period: 3/17/2015 - 6/30/2015
Wage Rate Per Hour: 65% of Journeyman's rate
Supplemental Benefit Per Hour: \$28.08

Elevator Service/Modernization Mechanic (Fourth Year)

Effective Period: 7/1/2014 - 3/16/2015
Wage Rate Per Hour: 75% of Journeyman's rate
Supplemental Benefit Per Hour: \$26.81

Effective Period: 3/17/2015 - 6/30/2015
Wage Rate Per Hour: 75% of Journeyman's rate
Supplemental Benefit Per Hour: \$28.89

(Local #1)

ENGINEER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 5)

Engineer - First Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$22.49
Supplemental Benefit Rate per Hour: \$20.68

Engineer - Second Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$28.11
Supplemental Benefit Rate per Hour: \$20.68

Engineer - Third Year

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$20.92
Supplemental Benefit Rate per Hour: \$20.68

Engineer - Fourth Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$33.73
Supplemental Benefit Rate per Hour: \$20.68

(Local #15)

ENGINEER - OPERATING
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 5)

Operating Engineer - First Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour 40% of Journeyperson's Rate
Supplemental Benefit Per Hour: \$18.60

Operating Engineer - Second Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyperson's Rate
Supplemental Benefit Per Hour: \$18.60

Operating Engineer - Third Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 60% of Journeyperson's Rate
Supplemental Benefit Per Hour: \$18.60

(Local #14)

FLOOR COVERER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Floor Coverer (First Year)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 40% of Journeyperson's rate
Supplemental Rate Per Hour: \$30.25

Floor Coverer (Second Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: \$30.25

Floor Coverer (Third Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Rate Per Hour: \$30.25

Floor Coverer (Fourth Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: \$30.25

(Carpenters District Council)

GLAZIER

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Glazier (First Year)

Effective Period: 7/1/2014 - 10/31/2014
Wage Rate Per Hour: 40% of Journeyperson's rate
Supplemental Rate Per Hour: \$12.97

Effective Period: 11/1/2014 - 6/30/2015
Wage Rate Per Hour: 40% of Journeyperson's rate
Supplemental Rate Per Hour: \$13.12

Glazier (Second Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: \$22.25

Glazier (Third Year)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
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Effective Period: 7/1/2014 - 10/31/2014
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: \$24.75

Effective Period: 11/1/2014 - 6/30/2015
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: \$25.10

Glazier (Fourth Year)

Effective Period: 7/1/2014 - 10/31/2014
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: \$29.87

Effective Period: 11/1/2014 - 6/30/2015
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: \$30.02

(Local #1281)

HEAT & FROST INSULATOR
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Heat & Frost Insulator (First Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 40% of Journeyperson's rate

Heat & Frost Insulator (Second Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 60% of Journeyperson's rate

Heat & Frost Insulator (Third Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 70% of Journeyperson's rate

Heat & Frost Insulator (Fourth Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 80% of Journeyperson's rate

(Local #12)

**HOUSE WRECKER
(TOTAL DEMOLITION)
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)**

House Wrecker - First Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$20.52
Supplemental Benefit Rate per Hour: \$16.60

House Wrecker - Second Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$21.67
Supplemental Benefit Rate per Hour: \$16.60

House Wrecker - Third Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$23.27
Supplemental Benefit Rate per Hour: \$16.60

House Wrecker - Fourth Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$25.83
Supplemental Benefit Rate per Hour: \$16.60

(Mason Tenders District Council)

**IRON WORKER - ORNAMENTAL
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)**

Iron Worker (Ornamental) - 1st Ten Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyman's rate
Supplemental Rate Per Hour: \$35.15

Iron Worker (Ornamental) - 11 -16 Months

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Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 55% of Journeyman's rate
Supplemental Rate Per Hour: \$36.21

Iron Worker (Ornamental) - 17 - 22 Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 60% of Journeyman's rate
Supplemental Rate Per Hour: \$37.27

Iron Worker (Ornamental) - 23 - 28 Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 70% of Journeyman's rate
Supplemental Rate Per Hour: \$39.40

Iron Worker (Ornamental) - 29 - 36 Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 80% of Journeyman's rate
Supplemental Rate Per Hour: \$41.52

(Local #580)

**IRON WORKER - STRUCTURAL
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 6)**

Iron Worker (Structural) - 1st Six Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$24.98
Supplemental Benefit Rate per Hour: \$45.53

Iron Worker (Structural) - 7- 18 Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$25.58
Supplemental Benefit Rate per Hour: \$45.53

Iron Worker (Structural) - 19 - 36 months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$26.18
Supplemental Benefit Rate per Hour: \$45.53

Local #40 and #361)

LABORER (FOUNDATION, CONCRETE, EXCAVATING, STREET PIPE LAYER & COMMON)
(Ratio Apprentice to Journeyman: 1 to 1, 1 to 3)

Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) - First 1000 hours

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyman's rate
Supplemental Rate Per Hour: \$34.88

Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) - Second 1000 hours

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 60% of Journeyman's rate
Supplemental Rate Per Hour: \$34.88

Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) - Third 1000 hours

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 75% of Journeyman's rate
Supplemental Rate Per Hour: \$34.88

Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) - Fourth 1000 hours

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 90% of Journeyman's rate
Supplemental Rate Per Hour: \$34.88

(Local #731)

MARBLE MECHANICS
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
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Cutters & Setters - First 750 Hours

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 50% of Journeyperson's rate

NO BENEFITS PAID DURING THE FIRST TWO MONTHS (PROBATIONARY PERIOD)

Cutters & Setters - Second 750 Hours

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 55% of Journeyperson's rate

Cutters & Setters - Third 750 Hours

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 65% of Journeyperson's rate

Cutters & Setters - Fourth 750 Hours

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 75% of Journeyperson's rate

Cutters & Setters - Fifth 750 Hours

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 85% of Journeyperson's rate

Cutters & Setters - Sixth 750 Hours

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 95% of Journeyperson's rate

Polishers & Finishers - First 750 Hours

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 50% of Journeyperson's rate

NO BENEFITS PAID DURING THE FIRST TWO MONTHS (PROBATIONARY PERIOD)

Polishers & Finishers - Second 750 Hours

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 60% of Journeyperson's rate

Polishers & Finishers - Third 750 Hours

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 75% of Journeyperson's rate

Polishers & Finishers - Fourth 750 Hours

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\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 90% of Journeyman's rate

(Local #7)

MASON TENDER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

Mason Tender - First Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$20.99

Supplemental Benefit Rate per Hour: \$17.86

Mason Tender - Second Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$22.14

Supplemental Benefit Rate per Hour: \$17.86

Mason Tender - Third Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$23.84

Supplemental Benefit Rate per Hour: \$17.86

Mason Tender - Fourth Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$26.50

Supplemental Benefit Rate per Hour: \$17.86

(Local #79)

METALLIC LATHER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

Metallic Lather (First Year -Called Prior to 6/29/11)

PUBLISH DATE: 7/1/2014

EFFECTIVE PERIOD: JULY 1, 2014 THROUGH JUNE 30, 2015

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Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$28.11
Supplemental Benefit Rate per Hour: \$22.79

Metallic Lather (Second Year - Called Prior to 6/29/11)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$32.71
Supplemental Benefit Rate per Hour: \$24.44

Metallic Lather (Third Year - Called Prior to 6/29/11)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$37.77
Supplemental Benefit Rate per Hour: \$25.59

Metallic Lather (First Year - Called On Or After 6/29/11)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$17.71
Supplemental Benefit Rate per Hour: \$19.85

Metallic Lather (Second Year - Called On Or After 6/29/11)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$22.81
Supplemental Benefit Rate per Hour: \$19.85

Metallic Lather (Third Year - Called On Or After 6/29/11)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$27.91
Supplemental Benefit Rate per Hour: \$19.85

(Local #46)

MILLWRIGHT
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Millwright (First Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$26.64

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: \$32.84

Millwright (Second Year)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$31.49

Supplemental Benefit Rate per Hour: \$36.18

Millwright (Third Year)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$36.33

Supplemental Benefit Rate per Hour: \$40.66

Millwright (Fourth Year)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$46.02

Supplemental Benefit Rate per Hour: \$46.24

(Local #740)

PAVER AND ROADBUILDER

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Paver and Roadbuilder - First Year (Minimum 1000 hours)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$26.61

Supplemental Benefit Rate per Hour: \$16.50

Paver and Roadbuilder - Second Year (Minimum 1000 hours)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$28.22

Supplemental Benefit Rate per Hour: \$16.50

(Local #1010)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

PAINTER

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Painter - Brush & Roller - First Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$15.80
Supplemental Benefit Rate per Hour: \$11.88

Painter - Brush & Roller - Second Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$19.75
Supplemental Benefit Rate per Hour: \$15.73

Painter - Brush & Roller - Third Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$23.70
Supplemental Benefit Rate per Hour: \$18.64

Painter - Brush & Roller - Fourth Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$31.60
Supplemental Benefit Rate per Hour: \$24.02

(District Council of Painters)

PAINTER - STRUCTURAL STEEL

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Painters - Structural Steel (First Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 40% of Journeyperson's rate

Painters - Structural Steel (Second Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 60% of Journeyperson's rate

Painters - Structural Steel (Third Year)

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 80% of Journeyperson's rate

(Local #806)

PLASTERER

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Plasterer - First Year: 1st Six Months

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 40% of Journeyperson's rate

Supplemental Rate Per Hour: \$15.76

Plasterer - First Year: 2nd Six Months

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 45% of Journeyperson's rate

Supplemental Rate Per Hour: \$16.24

Plasterer - Second Year: 1st Six Months

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 55% of Journeyperson's rate

Supplemental Rate Per Hour: \$18.21

Plasterer - Second Year: 2nd Six Months

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 60% of Journeyperson's rate

Supplemental Rate Per Hour: \$19.29

Plasterer - Third Year: 1st Six Months

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 70% of Journeyperson's rate

Supplemental Rate Per Hour: \$21.46

Plasterer - Third Year: 2nd Six Months

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 75% of Journeyperson's rate

Supplemental Rate Per Hour: \$22.54

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§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

(Local #530)

PLUMBER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

Plumber - First Year: 1st Six Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$14.00
Supplemental Benefit Rate per Hour: \$0.71

Plumber - First Year: 2nd Six Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$14.00
Supplemental Benefit Rate per Hour: \$2.96

Plumber - Second Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$23.87
Supplemental Benefit Rate per Hour: \$11.46

Plumber - Third Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$25.97
Supplemental Benefit Rate per Hour: \$11.46

Plumber - Fourth Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$28.82
Supplemental Benefit Rate per Hour: \$11.46

Plumber - Fifth Year: 1st Six Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$30.22
Supplemental Benefit Rate per Hour: \$11.46

Plumber - Fifth Year: 2nd Six Months

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\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$42.29

Supplemental Benefit Rate per Hour: \$11.46

(Plumbers Local #1)

**POINTER - WATERPROOFER, CAULKER MECHANIC (EXTERIOR BUILDING
RENOVATION)**

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

Pointer - Waterproofer, Caulker Mechanic - First Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$25.01

Supplemental Benefit Rate per Hour: \$4.75

Pointer - Waterproofer, Caulker Mechanic - Second Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$27.25

Supplemental Benefit Rate per Hour: \$9.70

Pointer - Waterproofer, Caulker Mechanic - Third Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$32.24

Supplemental Benefit Rate per Hour: \$12.45

Pointer - Waterproofer, Caulker Mechanic - Fourth Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$38.66

Supplemental Benefit Rate per Hour: \$12.45

(Bricklayer District Council)

ROOFER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 2)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Roofer - First Year

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 35% of Journeyperson's Rate

Roofer - Second Year

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 50% of Journeyperson's Rate

Roofer - Third Year

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 60% of Journeyperson's Rate

Roofer - Fourth Year

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 75% of Journeyperson's Rate

(Local #8)

SHEET METAL WORKER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Sheet Metal Worker (0-6 Months)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 25% of Journeyperson's rate
Supplemental Rate Per Hour: \$6.15

Sheet Metal Worker (7-18 Months)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 35% of Journeyperson's rate
Supplemental Rate Per Hour: \$16.21

Sheet Metal Worker (19-30 Months)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 45% of Journeyperson's rate
Supplemental Rate Per Hour: \$22.23

Sheet Metal Worker (31-36 Months)

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Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 55% of Journeyman's rate

Supplemental Rate Per Hour: \$26.16

Sheet Metal Worker (37-42 Months)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 60% of Journeyman's rate

Supplemental Rate Per Hour: \$28.13

Sheet Metal Worker (43-48 Months)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 70% of Journeyman's rate

Supplemental Rate Per Hour: \$32.09

Sheet Metal Worker (49-54 Months)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 75% of Journeyman's rate

Supplemental Rate Per Hour: \$34.07

Sheet Metal Worker (55-60 Months)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 80% of Journeyman's rate

Supplemental Rate Per Hour: \$36.03

(Local #28)

SIGN ERECTOR

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

Sign Erector - First Year: 1st Six Months

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 35% of Journeyman's rate

Supplemental Rate Per Hour: \$5.96

Sign Erector - First Year: 2nd Six Months

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 40% of Journeyman's rate

Supplemental Rate Per Hour: \$6.75

Sign Erector - Second Year: 1st Six Months

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Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 45% of Journeyperson's rate
Supplemental Rate Per Hour: \$7.55

Sign Erector - Second Year: 2nd Six Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: \$8.34

Sign Erector - Third Year: 1st Six Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 55% of Journeyperson's rate
Supplemental Rate Per Hour: \$9.13

Sign Erector - Third Year: 2nd Six Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: \$9.92

Sign Erector - Fourth Year: 1st Six Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Rate Per Hour: \$10.72

Sign Erector - Fourth Year: 2nd Six Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Rate Per Hour: \$11.51

Sign Erector - Fifth Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Rate Per Hour: \$12.30

Sign Erector - Sixth Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: \$12.30

(Local #137)

TEAMFITTER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

Steamfitter - First Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate and Supplemental Per Hour: 40% of Journeyman's rate

Steamfitter - Second Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate and Supplemental Rate Per Hour: 50% of Journeyman's rate.

Steamfitter - Third Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate and Supplemental Rate per Hour: 65% of Journeyman's rate.

Steamfitter - Fourth Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate and Supplemental Rate Per Hour: 80% of Journeyman's rate.

Steamfitter - Fifth Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate and Supplemental Rate Per Hour: 85% of Journeyman's rate.

(Local #638)

STONE MASON - SETTER

(Ratio Apprentice of Journeyman: 1 to 1, 1 to 2)

Stone Mason - Setters - First 750 Hours

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 50% of Journeyman's rate

Stone Mason - Setters - Second 750 Hours

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 60% of Journeyman's rate

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Supplemental Rate Per Hour: 50% of Journeyman's rate

Stone Mason - Setters - Third 750 Hours

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 70% of Journeyman's rate

Supplemental Rate Per Hour: 50% of Journeyman's rate

Stone Mason - Setters - Fourth 750 Hours

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 80% of Journeyman's rate

Supplemental Rate Per Hour: 50% of Journeyman's rate

Stone Mason - Setters - Fifth 750 Hours

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 90% of Journeyman's rate

Supplemental Rate Per Hour: 50% of Journeyman's rate

Stone Mason - Setters - Sixth 750 Hours

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 100% of Journeyman's rate

Supplemental Rate Per Hour: 50% of Journeyman's rate

(Bricklayers District Council)

TAPER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

Drywall Taper - First Year

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 40% of Journeyman's rate

Drywall Taper - Second Year

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 60% of Journeyman's rate

Drywall Taper - Third Year

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 80% of Journeyman's rate

Local #1974)

TILE LAYER - SETTER
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

Tile Layer - Setter - First 750 Hours

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 50% of Journeyman's rate

Tile Layer - Setter - Second 750 Hours

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 55% of Journeyman's rate

Tile Layer - Setter - Third 750 Hours

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 65% of Journeyman's rate

Tile Layer - Setter - Fourth 750 Hours

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 75% of Journeyman's rate

Tile Layer - Setter - Fifth 750 Hours

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 85% of Journeyman's rate

Tile Layer - Setter - Sixth 750 Hours

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 95% of Journeyman's rate

(Local #7)

TIMBERPERSON
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 6)

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Timberperson - First Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 40% of Journeyperson's rate
Supplemental Rate Per Hour: \$30.89

Timberperson - Second Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: \$30.89

Timberperson - Third Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Rate Per Hour: \$30.89

Timberperson - Fourth Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: \$30.89

(Local #1536)

LABOR LAW §230 AND
NYC ADMINISTRATIVE CODE §6-130 BUILDING SERVICE EMPLOYEES

PREVAILING WAGE FOR BUILDING SERVICE EMPLOYEES ON NYC CONTRACTS PURSUANT
TO LABOR LAW §230 ET SEQ.

Building service employees on public contracts must receive not less than the prevailing rate of wage and supplements for the classification of work performed. In accordance with Labor Law §230 et seq. the Comptroller of the City of New York has promulgated this schedule of prevailing wages and supplemental benefits for building service employees engaged on New York City public building service contracts in excess of \$1,500.00. Prevailing rates are required to be annexed to and form part of the contract pursuant to §231 (4).

This schedule is a compilation of separate determinations of the prevailing rate of wage and supplements made by the Comptroller for each trade classification listed herein pursuant to New York State Labor Law section 234 (1). The source of the wage and supplement rates, whether a collective bargaining agreement, survey data or other, is listed at the end of each classification.

Agency Chief Contracting Officers should contact the Bureau of Labor Law's Classification Unit with any questions concerning trade classifications, prevailing rates or prevailing practices with respect to procurement on New York City building services contracts. Contractors are advised to review the Comptroller's Prevailing Wage Schedule before bidding on building services contracts. Contractors with questions concerning trade classifications, prevailing rates or prevailing practices with respect to building services contracts in the procurement stage must contact the contracting agency responsible for the procurement.

Any error as to compensation under the prevailing wage law or other information as to trade classification, made by the contracting agency in the contract documents or in any other communication, will not preclude a finding against the contractor of prevailing wage violation.

Any questions concerning trade classifications, prevailing rates or prevailing practices on New York City building services contracts that have already been awarded may be directed to the Bureau of Labor Law's Classification Unit by calling (212) 669-7974. All callers must have the agency name and contract registration number available when calling with questions on building services contracts. Please direct all other compliance issues to: Bureau of Labor Law, Attn: Wasyl Kinach, P.E., Office of the Comptroller, 1 Centre Street, Room 1122, New York, N.Y. 10007; Fax (212) 669-4002.

PREVAILING WAGE FOR BUILDING SERVICE EMPLOYEES IN NEW YORK CITY LEASED OR
FINANCIALLY ASSISTED FACILITIES PURSUANT TO NYC ADMINISTRATIVE CODE § 6-130

Covered landlords & covered financial assistance recipients shall ensure that all building service employees performing building service work at the premises to which a lease or financial assistance pertains are paid no less than the prevailing wage listed in the Labor Law §230 Prevailing Wage Schedule.

Covered Landlords include:

Businesses (other than not-for-profit organizations) leasing to New York City agencies

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§230 PREVAILING WAGE SCHEDULE

commercial office space or commercial office facilities of 10,000 square feet or more where the City leases or rents no less than 51% of the total square footage of the building to which the lease applies (no less than 80% in Staten Island or in an area not defined as an exclusion area pursuant to section 421-a of the real property tax law on the date of enactment of the local law).

Covered Financial Assistance Recipients include:

Businesses (other than not-for-profit organizations) with annual gross revenues of five million dollars or more who have received financial assistance from the City of New York (as defined in New York City Administrative Code §6-130) with a total value of one million dollars or more.

Exemptions: Business Improvement Districts and employers with manufacturing operations at the premises to which the financial assistance pertains.

The information is intended to assist you in meeting your prevailing wage obligation. You should consult New York City Administrative Code §6-130 to determine whether you are covered by this prevailing wage law. New York City Administrative Code § 6-130 requires the City to maintain an updated list of covered landlords and financial assistance recipients who are subject to the prevailing wage requirement.

Labor Law § 231 (6) and NYC Administrative Law §6-130 requires contractors to post on the site of the work a current copy of this schedule of wages and supplements.

This schedule is applicable to work performed during the effective period, unless otherwise noted. Changes to this schedule are published on our web site www.comptroller.nyc.gov. Contractors must pay the wages and supplements in effect when the building service employee performs the work. Preliminary schedules for future one-year periods appear in the City Record on or about June 1 each succeeding year. Final schedules appear on or about July 1 in the City Record and on our web site www.comptroller.nyc.gov.

Contractors are solely responsible for maintaining original payroll records delineating, among other things, the hours worked by each employee within a given classification.

Some of the rates in this schedule are based on collective bargaining agreements. The Comptroller's Office has attempted to include all overtime, shift and night differential, Holiday, Saturday, Sunday or other premium time work. However, this schedule does not set forth every prevailing practice with respect to such rates with which employers must comply. All such practices are nevertheless part of the employer's prevailing wage obligation and contained in the collective bargaining agreements of the prevailing wage unions. These collective bargaining agreements are available for inspection by appointment. Requests for appointments may be made by calling (212) 669-4443, Monday through Friday between the hours of 9 a.m. and 5 p.m.

In order to meet their obligation to provide prevailing supplemental benefits to each covered employee, employers must either:

- 1) Provide bona-fide benefits which cost the employer no less than the prevailing supplemental benefits rate; or
- 2) Supplement the employee's hourly wage by an amount no less than the prevailing supplemental benefits rate; or
- 3) Provide a combination of bona-fide benefits and wage supplements which cost the employer no less than the prevailing supplemental benefits rate in total.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
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Particular attention should be given to the supplemental benefits requirement. Although in most instances the payment or provision for supplemental benefits is for each hour worked, some classifications require the payment or provision of supplemental benefits for each hour paid. Consequently, some prevailing practices require benefits to be purchased at the overtime, shift differential, Holiday, Saturday, Sunday or other premium time rate.

Benefits are paid for EACH HOUR WORKED unless otherwise noted.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§230 PREVAILING WAGE SCHEDULE



THE CITY OF NEW YORK
OFFICE OF THE COMPTROLLER
BUREAU OF LABOR LAW
1 CENTRE STREET
NEW YORK, NY 10007

SCOTT M. STRINGER
COMPTROLLER

If you are a Covered Building Service Employee and you have been paid less than the Prevailing Wage and Benefits, please contact us at 212-669-4443 or download our complaint form from our website at WWW.COMPTROLLER.NYC.GOV (click on the Bureau of Labor Law).

Si es un empleado de servicios a edificios elegible y recibió menos del sueldo prevalente y beneficios, por favor contáctenos en 212-669-4443 o descarga un formulario de reclamo del sitio del Internet WWW.COMPTROLLER.NYC.GOV (opreme "Oficina de Derecho Laboral").

Wasył Kinach, P.E.
Director of Classifications
Bureau of Labor Law

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BOILER SERVICEPERSON/TANK CLEANER MECHANIC (LOW PRESSURE)

Boiler Service Person/Tank Cleaner Mechanic (Low Pressure)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$11.00

Supplemental Benefit Rate per Hour: \$7.15

Overtime Description

Work in excess of 8 hours performed on a Sunday or Holiday shall be paid two and one half times the regular rate.

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day

Martin Luther King Jr. Day

President's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Employee's Birthday

Vacation

1 year service.....five (5) days

3 years service or more.....ten (10) days

8 years service or more.....fifteen (15) days

13 years service or more.....twenty (20) days

SICK LEAVE:

1-2 years employment.....4 days

2-3 years employment.....5 days

3-4 years employment.....6 days

4-5 years employment.....8 days

6 years or more employment.....10 days

(Local #32 B/J)

BUILDING CLEANER AND MAINTAINER (OFFICE)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§230 PREVAILING WAGE SCHEDULE

Office Building Class "A" Handyperson (Over 280,000 square feet gross area)

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$25.65

Supplemental Benefit Rate per Hour: \$9.91

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$26.20

Supplemental Benefit Rate per Hour: \$10.46

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Office Building Class "A" Foreperson, Starter (Over 280,000 square feet gross area)

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$25.54

Supplemental Benefit Rate per Hour: \$9.91

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$26.09

Supplemental Benefit Rate per Hour: \$10.46

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Office Building Class "A" Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director (Over 280,000 square feet gross area)

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$23.42

Supplemental Benefit Rate per Hour: \$9.91

Supplemental Note: for new employee 0-3 months of employment - \$0.00; for new employee 4-12 months of employment - \$7.22; for new employee 13-24 months of employment - \$9.58

NEW HIRE: Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director may be paid 75% of the wage rate above for the first 21 months of employment, 85% of the wage rate above for the 22nd through 42nd months of employment, and upon the completion of 42 months of employment employee shall be paid the full wage rate. Note: New Hires hired before January 1, 2012 will continue to receive 80% of the wage rate above for the first 30 months, and upon the completion of 30 months of employment employee shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$23.92

Supplemental Benefit Rate per Hour: \$10.46

Supplemental Note: for new employee 0-3 months of employment - \$0.00; for new employee 4-12 months of employment - \$7.67; for new employee 13-24 months of employment - \$10.13

NEW HIRE: Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director may be paid 75% of the wage rate above for the first 21 months of employment, 85% of the wage rate above for the 22nd through 42nd months of employment, and upon the completion of 42 months of employment employee shall be paid the full wage rate.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§230 PREVAILING WAGE SCHEDULE

Note: New Hires hired before January 1, 2012 will continue to receive 80% of the wage rate above for the first 30 months, and upon the completion of 30 months of employment employee shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Office Building Class "B" Handyperson (Over 120,000 and less than 280,000 square feet gross area)

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$25.62

Supplemental Benefit Rate per Hour: \$9.91

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$26.17

Supplemental Benefit Rate per Hour: \$10.46

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Office Building Class "B" Foreperson, Starter (Over 120,000 and less than 280,000 square feet gross area)

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$25.50

Supplemental Benefit Rate per Hour: \$9.91

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$26.05

Supplemental Benefit Rate per Hour: \$10.46

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Office Building Class "B" Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director (Over 120,000 and less than 280,000 square feet gross area)

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$23.39

Supplemental Benefit Rate per Hour: \$9.91

Supplemental Note: for new employee 0-3 months of employment - \$0.00; for new employee 4-12 months of employment - \$7.22; for new employee 13-24 months of employment - \$9.58

NEW HIRE: Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director may be paid 75% of the wage rate above for the first 21 months of employment, 85% of the wage rate above for the 22nd through 42nd months of employment, and upon the completion of 42 months of employment employee shall be paid the full wage rate. Note: New Hires hired before January 1, 2012 will continue to receive 80% of the wage rate above for the first 30 months, and upon the completion of 30 months of employment employee shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$23.89

Supplemental Benefit Rate per Hour: \$10.46

Supplemental Note: for new employee 0-3 months of employment - \$0.00; for new employee 4-12 months of employment - \$7.67; for new employee 13-24 months of employment - \$10.13

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
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NEW HIRE: Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director may be paid 75% of the wage rate above for the first 21 months of employment, 85% of the wage rate above for the 22nd through 42nd months of employment, and upon the completion of 42 months of employment employee shall be paid the full wage rate. Note: New Hires hired before January 1, 2012 will continue to receive 80% of the wage rate above for the first 30 months, and upon the completion of 30 months of employment employee shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Office Building Class "C" Handyperson (Less than 120,000 square feet gross area)

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$25.57

Supplemental Benefit Rate per Hour: \$9.91

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$26.12

Supplemental Benefit Rate per Hour: \$10.46

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Office Building Class "C" Foreperson, Starter (Less than 120,000 square feet gross area)

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$25.46

Supplemental Benefit Rate per Hour: \$9.91

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$26.01

Supplemental Benefit Rate per Hour: \$10.46

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Office Building Class "C" Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director (Less than 120,000 square feet gross area)

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$23.35

Supplemental Benefit Rate per Hour: \$9.91

Supplemental Note: for new employee 0-3 months of employment - \$0.00; for new employee 4-12 months of employment - \$7.22; for new employee 13-24 months of employment - \$9.58

NEW HIRE: Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director may be paid 75% of the wage rate above for the first 21 months of employment, 85% of the wage rate above for the 22nd through 42nd months of employment, and upon the completion of 42 months of employment employee shall be paid the full wage rate. Note: New Hires hired before January 1, 2012 will continue to receive 80% of the wage rate above for the first 30 months, and upon the completion of 30 months of employment employee shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Effective Period: 1/1/2015 - 6/30/2015

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§230 PREVAILING WAGE SCHEDULE

Wage Rate per Hour: \$23.85

Supplemental Benefit Rate per Hour: \$10.46

Supplemental Note: for new employee 0-3 months of employment - \$0.00; for new employee 4-12 months of employment - \$7.67; for new employee 13-24 months of employment - \$10.13

NEW HIRE: Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director may be paid 75% of the wage rate above for the first 21 months of employment, 85% of the wage rate above for the 22nd through 42nd months of employment, and upon the completion of 42 months of employment employee shall be paid the full wage rate. Note: New Hires hired before January 1, 2012 will continue to receive 80% of the wage rate above for the first 30 months, and upon the completion of 30 months of employment employee shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Months of employment shall be defined as an Employee's length of service with the Employer or at the Facility, whichever is greater.

Overtime Description

Supplemental Benefits shall be paid for each hour paid, up to forty (40) paid hours per week.

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for work on a holiday plus the day's pay.

Time and one half the regular hourly rate after 40 hours in any work week.

Paid Holidays

New Year's Day

President's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Vacation

Less than 6 months of work.....no vacation

6 months of work.....three (3) days

1 year of work.....ten (10) days

5 years of work.....fifteen (15) days

15 years of work.....twenty (20) days

21 years of work.....twenty-one (21) days

22 years of work.....twenty-two (22) days

23 years of work.....twenty-three (23) days

24 years of work.....twenty-four (24) days

25 years or more of work.....twenty-five (25) days

Plus two Personal Days per year.

Sick Leave:

10 sick days per year.

Unused sick leave paid in the succeeding January, one full day pay for each unused sick day.

(Local #32 B/J)

BUILDING CLEANER AND MAINTAINER (RESIDENTIAL)

Residential Building Handyperson

Effective Period: 7/1/2014 - 4/20/2015

Wage Rate per Hour: \$24.26

Supplemental Benefit Rate per Hour: \$9.83

Supplemental Note: for new employee 0-3 months of employment - \$0.00. Effective 1/1/2015 - \$10.38

Effective Period: 4/21/2015 - 6/30/2015

Wage Rate per Hour: \$24.83

Supplemental Benefit Rate per Hour: \$10.38

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Residential Building Cleaner/Porter, Doorperson, Elevator Operator

Effective Period: 7/1/2014 - 4/20/2015

Wage Rate per Hour: \$21.98

Supplemental Benefit Rate per Hour: \$9.83

Supplemental Note: for new employee 0-3 months of employment - \$0.00; for new employee 4-12 months of employment - \$7.22; for new employee 13-24 months of employment - \$9.58

Effective 1/1/2015 - \$10.38, for new employee 0-3 months of employment - \$0.00; for new employee 4-12 months of employment - \$7.67; for new employee 13-24 months of employment - \$10.13

NEW HIRE - Cleaner/Porter, Doorperson, Elevator Operator: may be paid a starting rate of 80% of the hourly rate published above. Upon completion of 30 months of employment, the new hire shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Effective Period: 4/21/2015 - 6/30/2015

Wage Rate per Hour: \$22.51

Supplemental Benefit Rate per Hour: \$10.38

Supplemental Note: for new employee 0-3 months of employment - \$0.00; for new employee 4-12 months of employment - \$7.67; for new employee 13-24 months of employment - \$10.13

NEW HIRE - Cleaner/Porter, Doorperson, Elevator Operator: 0-21 months may be paid 75% of the hourly wage rate published above, 22-42 months may be paid 85% of the hourly wage rate published above. Upon completion of 42 months of employment, the new hire shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Overtime Description

Supplemental Benefits shall be paid for each hour paid, up to forty (40) paid hours per week.

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for work on a holiday plus the day's pay.

Time and one half the regular hourly rate after 40 hours in any work week.

Paid Holidays

New Year's Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
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Martin Luther King Jr, Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Election Day
Thanksgiving Day
Christmas Day

Vacation

6 months.....three (3) days
1 year.....ten (10) days
5 years.....fifteen (15) days
15 years.....twenty (20) days
21 years.....twenty-one (21) days
22 years.....twenty-two (22) days
23 years.....twenty-three (23) days
24 years.....twenty-four (24) days
25 years.....twenty-five (25) days
Plus two Personal Days per year.

SICK LEAVE

After 1 year of service.....ten (10) days per year

(Local #32 B/J)

BUILDING HVAC SERVICES OPERATOR

Engineer (Refrigeration)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: **\$36.73**

Supplemental Benefit Rate per Hour: **\$16.35**

Fireperson

Fireperson (Helper): Assist the Engineer

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: **\$28.60**

Supplemental Benefit Rate per Hour: **\$15.97**

Please note that the NYC Comptroller's Office does not publish rates for the Stationary Engineer title.

Overtime Description

All hours worked on a holiday shall be paid at two and one half times the regular wage rate in lieu of the paid day off.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§230 PREVAILING WAGE SCHEDULE

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Time and one half the regular rate for Sunday.

Paid Holidays

New Year's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day
Plus six (6) floating Holidays

Vacation

6 months three (3) days
1 year ten (10) days
5 years fifteen (15) days
15 years twenty (20) days
21 years twenty-one (21) days
22 years twenty-two (22) days
23 years twenty-three (23) days
24 years twenty-four (24) days
25 years twenty-five (25) days

(Local #94)

CLEANER (PARKING GARAGE)

Garage Cleaner

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$10.76

Supplemental Benefit Rate per Hour: \$1.63

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular hourly rate after 40 hours in any work week.

(Based on data from NYS Department of Labor Occupational Employment Statistics and US Department of Labor Bureau of Labor Statistics)

FUEL OIL

Fuel Oil, Coal, Fuel Gas, Petroleum Product Chauffeur (5th Year and above)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
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Effective Period: 7/1/2014 - 12/15/2014
Wage Rate per Hour: \$31.36
Supplemental Benefit Rate per Hour: \$20.77

Effective Period: 12/16/2014 - 6/30/2015
Wage Rate per Hour: \$31.86
Supplemental Benefit Rate per Hour: \$21.27

Fuel Oil, Coal, Fuel Gas, Petroleum Product Chauffeur (4th Year)

Effective Period: 7/1/2014 - 12/15/2014
Wage Rate per Hour: \$28.75
Supplemental Benefit Rate per Hour: \$20.77

Effective Period: 12/16/2014 - 6/30/2015
Wage Rate per Hour: \$29.25
Supplemental Benefit Rate per Hour: \$21.27

Fuel Oil, Coal, Fuel Gas, Petroleum Product Chauffeur (3rd Year)

Effective Period: 7/1/2014 - 12/15/2014
Wage Rate per Hour: \$26.75
Supplemental Benefit Rate per Hour: \$20.77

Effective Period: 12/16/2014 - 6/30/2015
Wage Rate per Hour: \$27.25
Supplemental Benefit Rate per Hour: \$21.27

Fuel Oil, Coal, Fuel Gas, Petroleum Product Chauffeur (2nd Year)

Effective Period: 7/1/2014 - 12/15/2014
Wage Rate per Hour: \$24.75
Supplemental Benefit Rate per Hour: \$20.77

Effective Period: 12/16/2014 - 6/30/2015
Wage Rate per Hour: \$25.25
Supplemental Benefit Rate per Hour: \$21.27

Fuel Oil, Coal, Fuel Gas, Petroleum Product Chauffeur (1st Year)

Effective Period: 7/1/2014 - 12/15/2014
Wage Rate per Hour: \$22.75
Supplemental Benefit Rate per Hour: \$20.77

Effective Period: 12/16/2014 - 6/30/2015
Wage Rate per Hour: \$23.25
Supplemental Benefit Rate per Hour: \$21.27

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

- Martin Luther King Jr. Day
- Lincoln's Birthday
- Washington's Birthday
- Memorial Day
- Independence Day
- Labor Day
- Columbus Day
- Election Day
- Veteran's Day

Triple time the regular rate for work on the following holiday(s).

- New Year's Day
- Thanksgiving Day
- Christmas Day

Paid Holidays

- New Year's Day
- Martin Luther King Jr. Day
- Lincoln's Birthday
- Washington's Birthday
- Memorial Day
- Independence Day
- Labor Day
- Columbus Day
- Election Day
- Veteran's Day
- Thanksgiving Day
- Christmas Day

Vacation

Less than 75 days worked.....no vacation.
75 days worked, but less than 110 days worked in a calendar year.....five (5) days the following year.
110 days or more worked in a calendar year.....ten (10) days the following year.

SICK LEAVE:

1 day sick leave earned for each 40 days worked in the preceding calendar year for a maximum of five (5) days per calendar year.

(Local #553)

GARDENER

Gardener

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§230 PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$17.57
Supplemental Benefit Rate per Hour: \$1.63

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular hourly rate after 40 hours in any work week.

(Based on data from NYS Department of Labor Occupational Employment Statistics and US Department of Labor Bureau of Labor Statistics)

LOCKSMITH

Locksmith

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$22.28
Supplemental Benefit Rate per Hour: \$6.13

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular hourly rate after 40 hours in any work week.

(Based on data from NYS Department of Labor Occupational Employment Statistics and US Department of Labor Bureau of Labor Statistics)

MEDICAL WASTE REMOVAL

Driver

Effective Period: 7/1/2014 - 3/31/2015
Wage Rate per Hour: \$18.76
Supplemental Benefit Rate per Hour: \$9.47

Effective Period: 4/1/2015 - 6/30/2015
Wage Rate per Hour: \$19.59
Supplemental Benefit Rate per Hour: \$10.34

Helper

Effective Period: 7/1/2014 - 3/31/2015
Wage Rate per Hour: \$15.01
Supplemental Benefit Rate per Hour: \$9.47

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
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Effective Period: 4/1/2015 - 6/30/2015
Wage Rate per Hour: \$15.84
Supplemental Benefit Rate per Hour: \$10.34

Tractor Trailer Driver

Effective Period: 7/1/2014 - 3/31/2015
Wage Rate per Hour: \$21.26
Supplemental Benefit Rate per Hour: \$9.47

Effective Period: 4/1/2015 - 6/30/2015
Wage Rate per Hour: \$22.09
Supplemental Benefit Rate per Hour: \$10.34

Overtime Description

Time and one half the regular hourly rate after an 8 hour day or after 40 hours in any work week. The seventh day of work in a workweek is paid at double time the regular hourly rate. Time and one half the regular hourly rate for work on a holiday plus days pay for below paid holidays.

Paid Holidays

President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Vacation

1 year of service but less than five years.....ten (10) days
5 years of service but less than ten years.....fifteen (15) days
10 years of service.....sixteen (16) days
11 years.....seventeen (17) days
12 years.....eighteen (18) days
13 years.....nineteen (19) days
14 years.....twenty (20) days
20 years.....twenty-one (21) days
21 years.....twenty-two (22) days
22 years.....twenty-three (23) days
23 years.....twenty-four (24) days
24 years.....twenty-five (25) days
Plus 5 Personal Days

(Local #813)

MOVER - OFFICE FURNITURE AND EQUIPMENT

Heavy and Tractor Trailer Truck Driver

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§230 PREVAILING WAGE SCHEDULE

Tractor-trailer combination or a truck with a capacity of at least 26,000 pounds Gross Vehicle Weight (GVW)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$22.48

Supplemental Benefit Rate per Hour: \$5.13

Light Truck Driver

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$18.89

Supplemental Benefit Rate per Hour: \$5.13

Laborer and Freight, Stock, and Material Movers, Hand

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$17.59

Supplemental Benefit Rate per Hour: \$5.13

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular hourly rate after 40 hours in any work week.

(Based on data from NYS Department of Labor Occupational Employment Statistics and US Department of Labor Bureau of Labor Statistics)

REFUSE REMOVER

Refuse Remover

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$29.54

Supplemental Benefit Rate per Hour: \$5.13

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular hourly rate after 40 hours in any work week.

(Based on data from NYS Department of Labor Occupational Employment Statistics and US Department of Labor Bureau of Labor Statistics)

SECURITY GUARD (ARMED)

Security Guard (Armed)

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$28.25

Supplemental Benefit Rate per Hour: \$5.02

Supplemental Note: for new employee 0-30 days of employment - \$4.44; for new employee 31-120 days of employment - \$4.61; for new employee 121 days - 2 years of employment - \$4.63

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$28.50

Supplemental Benefit Rate per Hour: \$5.34

Supplemental Note: for new employee 0-30 days of employment - \$4.62; for new employee 31-120 days of employment - \$4.79; for new employee 121 days - 2 years of employment - \$4.90

Months of employment shall be defined as an Employee's length of service with the Employer or at the Facility, whichever is greater.

Overtime Description

A guard who works a holiday is paid the regular rate plus receives the paid holiday.
Supplemental Benefits shall be paid for each hour paid, up to forty (40) paid hours per week.

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular hourly rate after 40 hours in any work week.

Paid Holidays

New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day
Personal Day

Vacation

Months on payroll	Vacation with Pay
6	3 days
12	5 days
24	10 days
60	15 days
180	20 days
300	25 days

Sick Leave

Employees accrue paid sick leave at the rate of one (1) sick day for every six (6) months worked, up to a maximum of six (6) days a year.

(Local #32B/J)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$230 PREVAILING WAGE SCHEDULE

SECURITY GUARD (UNARMED)

Security Guard (Unarmed) 0 - 6 months

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$13.10

Supplemental Benefit Rate per Hour: \$4.63

Supplemental Note: for new employee 0-30 days of employment - \$4.44; for new employee 31-120 days of employment - \$4.61

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$13.35

Supplemental Benefit Rate per Hour: \$4.90

Supplemental Note: for new employee 0-30 days of employment - \$4.62; for new employee 31-120 days of employment - \$4.79

Security Guard (Unarmed) 7 - 12 months

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$13.60

Supplemental Benefit Rate per Hour: \$4.63

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$13.85

Supplemental Benefit Rate per Hour: \$4.90

Security Guard (Unarmed) 13 - 18 months

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$14.10

Supplemental Benefit Rate per Hour: \$4.63

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$14.35

Supplemental Benefit Rate per Hour: \$4.90

Security Guard (Unarmed) 19 - 24 months

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$14.60

Supplemental Benefit Rate per Hour: \$4.63

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$14.85

Supplemental Benefit Rate per Hour: \$4.90

Security Guard (Unarmed) 25 - 30 months

Effective Period: 7/1/2014 - 12/31/2014

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§230 PREVAILING WAGE SCHEDULE

Wage Rate per Hour: \$15.10

Supplemental Benefit Rate per Hour: \$5.02

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$15.35

Supplemental Benefit Rate per Hour: \$5.34

Security Guard (Unarmed) 31 months or more

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$15.60

Supplemental Benefit Rate per Hour: \$5.02

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$16.00

Supplemental Benefit Rate per Hour: \$5.34

Months of employment shall be defined as an Employee's length of service with the Employer or at the Facility, whichever is greater.

Overtime Description

A guard who works a holiday is paid the regular rate plus receives the paid holiday.

Supplemental Benefits shall be paid for each hour paid, up to forty (40) paid hours per week.

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular hourly rate after 40 hours in any work week.

Paid Holidays

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

Personal Day

Vacation

Months on payroll	Vacation with Pay
6	3 days
12	5 days
24	10 days
60	15 days
180	20 days
300	25 days

Sick Leave

Employees accrue paid sick leave at the rate of one (1) sick day for every six (6) months worked, up to a maximum of six (6) days a year.

(Local #32B/J)

WINDOW CLEANER

Window Cleaner

Effective Period: 7/1/2014 - 12/31/2014
Wage Rate per Hour: \$26.90
Supplemental Benefit Rate per Hour: \$9.91

Effective Period: 1/1/2015 - 6/30/2015
Wage Rate per Hour: \$27.40
Supplemental Benefit Rate per Hour: \$10.46

Power Operated Scaffolds, Manual Scaffolds, and Boatswain Chairs

Effective Period: 7/1/2014 - 12/31/2014
Wage Rate per Hour: \$29.27
Supplemental Benefit Rate per Hour: \$9.91

Effective Period: 1/1/2015 - 6/30/2015
Wage Rate per Hour: \$29.90
Supplemental Benefit Rate per Hour: \$10.46

Window Cleaner Apprentice (0 - 3 months)

Effective Period: 7/1/2014 - 12/31/2014
Wage Rate per Hour: \$19.92
Supplemental Benefit Rate per Hour: None

Effective Period: 1/1/2015 - 6/30/2015
Wage Rate per Hour: \$20.29
Supplemental Benefit Rate per Hour: None

Window Cleaner Apprentice (4 - 7 months)

Effective Period: 7/1/2014 - 12/31/2014
Wage Rate per Hour: \$21.54
Supplemental Benefit Rate per Hour: \$9.91

Effective Period: 1/1/2015 - 6/30/2015
Wage Rate per Hour: \$21.94
Supplemental Benefit Rate per Hour: \$10.46

Window Cleaner Apprentice (8 - 11 months)

Effective Period: 7/1/2014 - 12/31/2014

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§230 PREVAILING WAGE SCHEDULE

Wage Rate per Hour: \$22.82
Supplemental Benefit Rate per Hour: \$9.91

Effective Period: 1/1/2015 - 6/30/2015
Wage Rate per Hour: \$23.24
Supplemental Benefit Rate per Hour: \$10.46

Window Cleaner Apprentice (12 - 15 months)

Effective Period: 7/1/2014 - 12/31/2014
Wage Rate per Hour: \$24.12
Supplemental Benefit Rate per Hour: \$9.91

Effective Period: 1/1/2015 - 6/30/2015
Wage Rate per Hour: \$24.57
Supplemental Benefit Rate per Hour: \$10.46

Window Cleaner Apprentice (16 - 17 months)

Effective Period: 7/1/2014 - 12/31/2014
Wage Rate per Hour: \$25.44
Supplemental Benefit Rate per Hour: \$9.91

Effective Period: 1/1/2015 - 6/30/2015
Wage Rate per Hour: \$25.91
Supplemental Benefit Rate per Hour: \$10.46

Months of employment shall be defined as an Employee's length of service with the Employer or at the Facility, whichever is greater.

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Time and one half the regular rate for work on a holiday plus the day's pay.

Paid Holidays

New Year's Day
Martin Luther King Jr. Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day
Personal Day

Vacation

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§230 PREVAILING WAGE SCHEDULE

After 7 months but less than 1 year of service.....	five (5) days
1 year but less than 5 years of service.....	ten (10) days
5 years of service but less than 15 years of service.....	fifteen (15) days
15 years of service but less than 21 years of service.....	twenty (20) days
21 years.....	twenty-one (21) days
22 years.....	twenty-two (22) days
23 years.....	twenty-three (23) days
24 years.....	twenty-four (24) days
25 years or more of service.....	twenty-five (25) days
Plus 1 day per year for medical visit	

SICK LEAVE:

10 days after one year worked. Unused sick days to be paid in cash.

(Local #32 B/J)

Issue Date - January 15, 2015



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

**DDC STANDARD GENERAL CONDITIONS
FOR MULTIPLE CONTRACT PROJECTS**



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

NO TEXT



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Issue Date - January 15, 2015

**DIVISION 01 – DDC STANDARD GENERAL CONDITIONS
MULTIPLE CONTRACT PROJECTS**

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NO TEXT



SECTION 01 10 00
SUMMARY

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].
- B. Addendum to the General Conditions: These General Conditions include and are supplemented by the Addendum to the General Conditions (the "Addendum"). The Addendum includes the following: (1) schedules referred to in these General Conditions (Schedule A through F), (2) information regarding the applicability of various articles, and (3) amended articles, if any.
- C. **MULTIPLE CONTRACTS:** The Project involves multiple separate Contracts: (1) Contract for General Construction Work ("GC Contract"), (2) Contract for Plumbing Work ("Plumbing Contract"), (3) Heating/Ventilating/Air-Conditioning/Fire Protection Work ("HVAC and Fire Protection Contract"), and (4) Electrical Work ("Electrical Contract"). The Contracts pertaining to the Project are set forth in the Addendum. These Division 01 Standard General Conditions are applicable to all Contracts for the Project and shall constitute an integral part of each separate Contract to the same extent as though repeated in full therein.

1.2 SUMMARY:

- A. This section includes the following:
 - 1. Scope and Intent
 - 2. Provisions Referenced in the Contract
 - 3. Performance of Work During Non-Regular Work Hours (Pursuant to a Change Order)
 - 4. Interruption of Services at Existing Facilities
- B. This section includes a summary of each Contract, including responsibilities for coordination and temporary facilities and controls.
- C. Specific requirements of each Contract are also indicated in individual Specification Sections and on Drawings.
- D. Throughout these General Conditions, various responsibilities and obligations are assigned to each of the following four Contractors for:
 - 1) General Construction Work ("GC Contractor")
 - 2) Plumbing Work ("Plumbing Contractor")
 - 3) Heating/ Ventilating/ Air-Conditioning/ Fire Protection Work ("HVAC and Fire Protection Contractor"), and
 - 4) Electrical Work ("Electrical Contractor")

In the event the Project does not involve all four Contracts, the responsibilities and obligations of each omitted Contract shall be assigned to one of the Contracts included in the Project. The Addendum specifies which Contractor shall perform the responsibilities and obligations of each omitted Contract, as set forth in the General Conditions.



1.3 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.4 SCOPE AND INTENT:

- A. Description of Project: Refer to the Addendum for a description of this project.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB SECTION 1.4 B

- B. LEED: Green Building Council's Leadership in Energy & Environmental Design (LEED) Rating System, as specified in Section 01 81 13, "SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS."

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB SECTION 1.4 C

- C. COMMISSIONING: This project will be commissioned by an independent third party under separate contract with the City of New York. Commissioning shall be in accordance with ASHRAE and USGBC LEED-NC procedures, as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS. Each Contractor shall cooperate with the commissioning agent and provide whatever assistance is required.
- D. PROGRESS SCHEDULE: Refer to Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION for requirements of this project.
- E. COMPLETION OF WORK – Work to be done under each separate Contract comprises the furnishing of all labor, materials, equipment and other appurtenances, and obtaining all regulatory agency approvals necessary and required to complete the construction work in accordance with the Contract.
- F. OMISSION OF DETAILS – All work called for in the Specifications applicable to each separate Contract but not shown on the Contract Drawings in their present form, or vice versa, is required, and shall be performed by each Contractor as though it were originally delineated or described. The cost of such work shall be deemed included in the total Contract Price.
- G. WORK NOT IN SPECIFICATIONS OR CONTRACT DRAWINGS – Work not particularly specified in the Specifications nor detailed on the Contract Drawings but involved in carrying out their intent or in the complete and proper execution of the work, is required, and shall be performed by each Contractor. The cost of such work shall be deemed included in the total Contract Price.
- H. SILENCE OF THE SPECIFICATIONS – The apparent silence of the Specifications as to any detail, or the apparent omission from them of a detailed description concerning any work to be done and materials to be furnished, shall be regarded as meaning that only the best practice is to prevail and



that only the best material and workmanship is to be used and interpretation of the Specifications shall be made upon that basis.

- I. **CONFLICT BETWEEN CONTRACT DRAWINGS AND SPECIFICATIONS** – Should any conflict occur in or between the Drawings and Specifications, each Contractor shall be deemed to have estimated the most expensive way of doing the work unless each Contractor shall have asked for and obtained a decision in writing from the Commissioner before the submission of the bid as to what shall govern.
- J. **COOPERATION BETWEEN CONTRACTORS** – Inasmuch as the completion of the Project within the prescribed limit of time is dependent largely upon the close and active cooperation of all those engaged herein, it is therefore expressly understood and agreed that the Contractor shall lay out and install all work at such time or times and in such manner as not to delay or interfere with the carrying forward of the work of other Contractors. In the event of any dispute regarding possible or alleged interference between the various Contractors which may retard the progress of the work, the Contractor shall file a dispute in accordance with the Article of the Contract entitled "Dispute Resolution".

1.5 CONTRACT DRAWINGS AND SPECIFICATIONS:

- A. **SCHEDULE C** - The Contract Drawings are listed in Schedule C, which is set forth in the Addendum. Such drawings referred to in the Contract, and in the applicable Specifications for the Contract, bear the general title:

City of New York
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Division of Public Buildings

- B. **DOCUMENTS FURNISHED TO THE CONTRACTOR** - After the award of the Contract, the GC Contractor will be furnished with five (5) complete sets of paper prints of all Contract Drawings mentioned in Paragraph A above, as well as a copy of the Specifications.
- C. **PRINTS:** Each Contractor, other than GC Contractor referred to in Paragraph B, will receive three (3) complete sets of paper prints of all Drawings listed in Paragraph A and specifications.
- D. **ADDITIONAL COPIES** of Drawings and Specifications, when requested, will be furnished to each Contractor if available.
- E. **SUPPLEMENTARY DRAWINGS** - When, in the opinion of the Commissioner, it becomes necessary to more fully explain the work to be done, or to illustrate the work further, or to show any changes which may be required, drawings known as Supplementary Drawings will be prepared by the Commissioner.
- F. **COMPENSATION** - Where Supplementary Drawings entail extra work, compensation therefore to the affected Contractor shall be subject to the terms of the Contract. The Supplementary Drawings shall be binding upon such Contractor with the same force as the Contract Drawings.
- G. **SUPPLEMENTARY DRAWING PRINTS** - Three (3) copies of prints of these Supplementary Drawings will be furnished to the affected Contractor(s).
- H. **COPIES TO SUBCONTRACTORS** - Each Contractor shall furnish to its subcontractors and material suppliers such copies of Contract Drawings, Supplementary Drawings, or copies of the Specifications as may be required for its work.



1.6 SEPARATION OF WORK BETWEEN TRADES:

- A. **SCHEDULE E** – Requirements for various items of work are included in the Specifications for the separate contracts for the Project and in the General Conditions. Schedule E delineates the responsibilities of each separate contractor for various items of work, as well as the extent to which certain items involve coordination between trades. Schedule E is included in the Addendum. The delineation set forth in Schedule E shall be taken as specific instruction to each Contractor that is responsible for the listed items of work. Schedule E is not intended to limit the Contractor's responsibility for supervision and coordination as set forth in Paragraph B below. In the event of any conflict between the Specifications, the General Conditions and Schedule E, Schedule E shall take precedence; provided, however, in the event of an omission from Schedule E (i.e., Schedule E omits either a reference to or information concerning an item of work which is set forth in the Specifications or the General Conditions), such omission from Schedule E shall have no effect and the Contractor's obligation to perform the work, as set forth in the Specifications or the General Conditions, shall remain in full force and effect.
- B. **SUPERVISION AND COORDINATION** – Each Contractor is required to supply all necessary supervision and coordination information to other Contractors who are to supply work to accommodate their installation.

1.7 COORDINATION:

- A. **COORDINATION AND COOPERATION** - Each Contractor shall consult and study the requirements of the Contract Drawings and Specifications of all Contracts furnished to the Contractor, including all work to be performed by trade subcontractors, so that the Contractor may become acquainted with the work of the project as a whole in order to achieve the proper coordination and cooperation necessary for the efficient and timely performance of the work.
- B. **CONTRACTOR TO CHECK DRAWINGS:** - Each Contractor shall verify all dimensions, quantities and details shown on the Contract Drawings, Schedules, or other data received from the Commissioner, and shall notify the Commissioner of all errors, omissions, conflicts and discrepancies found therein. Notice of such errors shall be given before each Contractor proceeds with any work. Figures shall be used in preference to scale dimensions and large-scale drawings in preference to small-scale drawings.

1.8 SHOP DRAWINGS AND RECORD DRAWINGS:

- A. Refer to Division I Section 01 33 00 – SUBMITTAL PROCEDURES and Section 01 78 39 – PROJECT RECORD DRAWINGS for requirements applicable to shop drawings and record drawings.

1.9 INTEGRATED DRAWINGS:

- A. Refer to Division I Section 01 33 00 – SUBMITTAL PROCEDURES for requirements of each Contractor.



1.10 TEMPORARY FACILITIES, SERVICES AND CONTROLS:

- A. Refer to Division I Section 01 50 00 – TEMPORARY FACILITIES SERVICES AND CONTROLS and SCHEDULE E which is set forth in the Addendum for the responsibilities of each separate Contractor.

1.11 DUST CONTROL:

- A. The GC Contractor shall prepare, execute and manage a "Dust Control Plan" for the prevention of the emission of dust from construction related activities in compliance with 15 RCNY 13-01 et. seq.

1.12 SUBSTITUTIONS:

- A. Each Contractor shall cooperate with other Contractors involved to coordinate approved substitutions with remainder of the Work.

1.13 PROVISIONS REFERENCED IN THE CONTRACT:

- A. SCHEDULE A - Various Articles of the Contract refer to requirements set forth in Schedule A of the General Conditions. Schedule A, which is included in the Addendum, sets forth (1) the referenced Articles of the Contract, and (2) the specific requirements applicable to the Contract.
- B. EXTENSION OF TIME - Applications for Extensions of Time, as indicated in Article 13 of the Contract, shall be made in accordance with the Rules of the Procurement Policy Board.
- C. PARTIAL PAYMENTS FOR MATERIALS IN ADVANCE OF THEIR INCORPORATION IN THE WORK PURSUANT TO ARTICLE 42 OF THE CONTRACT – In order to better insure the availability of materials, fixtures and equipment when needed for the work, the Commissioner may authorize partial payment for certain materials, fixtures and equipment, prior to their incorporation in the work, but only in strict accordance with, and subject to, all the terms and conditions set forth in the Specifications, unless an alternate method of payment is elsewhere provided in the Specifications for specified materials, fixtures or equipment.
 - 1. Each Contractor shall submit to the Commissioner a written request, in quadruplicate, for payment for materials purchased or to be purchased which need to be paid prior to their actual incorporation in the work. The request shall be accompanied by a schedule of the types and quantities of materials, and shall state whether such materials are to be stored on or off the site.
 - 2. Where the materials are to be stored off the site, they shall be stored at a place other than the Contractor's premises (except with the written consent of the Commissioner) and under the conditions prescribed or approved by the Commissioner. The Contractor shall set apart and separately store at the place or places of storage all materials and shall clearly mark same "PROPERTY OF THE CITY OF NEW YORK", and further, shall not at any time move any of said materials to another off-site place of storage without the prior written consent of the Commissioner. Materials may be removed from their place of storage off the site for incorporation in the work upon approval of the Resident Engineer.
 - 3. Where the materials are to be stored at the site, they shall be stored at such locations as shall be designated by the Resident Engineer and only in such quantities as, in the opinion of the Resident Engineer, will not interfere with the proper performance of the work by the Contractor or by other Contractors then engaged in performing work on the site. Such materials shall not be removed from their place of storage on the site except for incorporation in the work, without the approval of the Resident Engineer.



4. INSURANCE

- a. STORAGE OFF-SITE – Where the materials are stored off the site and until such time as they are incorporated in the work, the Contractor shall fully insure such materials against any and all risks of destruction, damage or loss including but not limited to fire, theft, and any other casualty or happening. The policy of insurance shall be payable to the City of New York. It shall be in such terms and amounts as shall be approved by the Commissioner and shall be placed with a company duly licensed to do business in the State of New York. The Contractor shall deliver the original and one (1) copy of such policy or policies marked “Fully Paid” to the Commissioner.
 - b. STORAGE ON THE SITE – Where the materials are stored at the site, the Contractor shall furnish satisfactory evidence to the Commissioner that they are properly insured against loss, by endorsements or otherwise, under the policy or policies of insurance obtained by the Contractor to cover losses to materials owned or installed by the Contractor. The policy of insurance shall cover fire and extended coverage against windstorm, hail, explosion and riot attending a strike, civil commotion, aircraft, vehicles and smoke.
5. All costs, charges and expenses arising out of the storage of such materials, shall be paid by the Contractor and the City hereby reserves the right to retain out of any partial or final payment made under the Contract an amount sufficient to cover such costs, charges and expenses with the understanding that the City shall have and may exercise any and all other remedies at law for the recovery of such cost, charges and expenses. There shall be no increase in the Contract price for such costs, charges and expenses and the Contractor shall not make any claim or demand for compensation therefore.
 6. The Contractor shall pay any and all costs of handling and delivery of materials, to the place of storage and from the place of storage to the site of the work; and the City shall have the right to retain from any partial or final payment an amount sufficient to cover the cost of such handling and delivery.
 7. In the event that the whole or any part of these materials are lost, damaged or destroyed in advance of their satisfactory incorporation in the work, the Contractor, at the Contractor's own cost, shall replace such lost, damaged or destroyed materials of the same character and quality. The City will reimburse the Contractor for the cost of the replaced materials to the extent, and only to the extent, of the funds actually received by the City under the policies of insurance hereinbefore referred to. Until such time as the materials are replaced, the City will deduct from the value of the stored materials or from any other money due under the Contract, the amount paid to the Contractor for such lost, damaged or destroyed materials.
 8. Should any of the materials paid for the City hereunder be subsequently rejected or incorporated in the work in a manner or by a method not in accordance with the Contract Documents, the Contractor shall remove and replace, at Contractor's own cost, such defective or improperly incorporated material with materials complying with the Contract Documents. Until such materials are replaced, the City will deduct from the value of the stored materials or from any other money due the Contractor, the amount paid by the City for such rejected or improperly incorporated materials.
 9. Payments for the cost of materials made hereunder shall not be deemed to be an acceptance of such materials as being in accordance with the Contract Documents, and the Contractor always retains and must comply with the Contractor's duty to deliver to the site and properly incorporate in the work only materials which comply with the Contract Documents.
 10. The Contractor shall retain any and all risks in connection with the damage, destruction or loss of the materials paid for hereunder to the time of delivery of the same to the site of the work and their proper incorporation in the work in accordance with the Contract Documents.



11. The Contractor shall comply with all laws and the regulations of any governmental body or agency pertaining to the priority purchase, allocation and use of the materials.
12. When requesting payment for such materials, the Contractor shall submit with the partial estimate duly authenticated documents of title, such as bills of sale, invoices or warehouse receipts, all in quadruplicate. The executed bills of sale shall transfer title to the materials from the Contractor to the City. (In the event that the invoices state that the material has been purchased by a subcontractor, bills of sale in quadruplicate will also be required transferring title to the materials from subcontractor to the Contractor).
13. Where the Contractor, with the approval of the Commissioner, has purchased unusually large quantities of materials in order to assure their availability for the work, the Commissioner, at the Commissioner's option, may waive the requirements of Paragraph 12 provided the Contractor furnishes evidence in the form of an affidavit from the Contractor in quadruplicate, and such other proof as the Commissioner may require, that the Contractor is the sole owner of such materials and has purchased them free and clear of all liens and other encumbrances. In such event, the Contractor shall pay for such materials and submit proof thereof, in the same manner as provided in Paragraph 12 hereof, within seven (7) days after receipt of payment therefore from the Comptroller. Failure on the part of the Contractor to submit satisfactory evidence that all such materials have been paid for in full, shall preclude the Contractor from payments under the Contract.
14. The Contractor shall include in each succeeding partial estimate requisition a summary of materials stored which shall set forth the quantity and value of materials in storage, on or off the site, at the end of each preceding estimate period; the amount removed for incorporation in the work; the quantity and value of materials delivered during the current period and the total value of materials on hand for which payment thereof will be included in the current payment estimate.
15. Upon proof to the satisfaction of the Commissioner of the actual cost of such materials and upon submission of proper proof of title as required under Paragraph 12 or Paragraph 13 hereof, payment will be made therefore to the extent of 85%, provided however, that the cost so verified, established and approved shall not exceed the estimated cost of such materials included in the approved detailed breakdown estimate submitted in accordance with Article 41 of the Contract; if it does, the City will pay only 85% approved estimated cost.
16. Upon the incorporation in the work of any such materials, which have been paid for in advance of such incorporation in accordance with the foregoing provisions, payment will be made for such materials incorporated in the work pursuant to Article 42 of the Contract, less any sums paid pursuant to Paragraph 15 herein.

D. MOBILIZATION PAYMENT – A line item for mobilization shall be allowed on each Contractor's Detailed Bid Breakdown submitted in accordance with Article 41 of the Contract. The Mobilization Payment is intended to include the cost of required bonds, insurance coverage and/or any other expenses required for the initiation of the Contract Work. All costs for mobilization shall be deemed included in the total Contract Price. The Detailed Bid Breakdown shall reflect, and the Mobilization Payment shall be made, in accordance with the following schedule:

Contract Amount	Percent	Mobilization
Less than - \$ 50,000	x 0	= 0
\$ 50,000 - \$ 100,000	x	= \$ 6,000
\$ 100,001 - \$ 500,000	x 6	= \$ 6,000 (min) - \$ 30,000 (max)



NEW YORK CITY DEPARTMENT OF
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\$ 500,000 - \$ 2,500,000	x	5	=	\$ 30,000 (min) - \$ 125,000 (max)
Over - \$ 2,500,000	x	4	=	\$ 125,000 (min) - \$ 300,000 (max)

Each Contractor may requisition for one-half (1/2) of the Mobilization Payment upon satisfactory completion of the following as applicable:

1. Installation of any required field office(s).
2. Submission of all required insurance certificates and bonds.
3. Approval by the Department of Design and Construction of the coordinated progress schedule for the project and the Contractor's Shop Drawing schedule.

The remaining balance of the Mobilization Payment may be requisitioned only after 10 percent (10%) of the Contract price, exclusive of the total amount of Mobilization Payments made or to be made hereunder, shall have been approved for payment.

- E. **ULTRA LOW SULFUR DIESEL FUEL AND BEST AVAILABLE TECHNOLOGY REPORTING:** Each Contractor shall submit reports to the Commissioner regarding the use of Ultra Low Sulfur Diesel Fuel in Non-Road Vehicles, and the implementation of Best Available Technology (BAT), as set forth in Article 5.4 of the Contract. Such reports shall be submitted in accordance with the schedule, format, directions and procedures established by the Commissioner.

1.14 PERFORMANCE OF WORK DURING NON-REGULAR WORK HOURS:

- A. **NON-REGULAR WORK HOURS:** The Commissioner may issue a change order in accordance with Article 25 of the Contract which (1) directs the Contractor to perform the Work, or specific components thereof, during other than regular work hours (i.e., evenings, weekends and holidays), and (2) provides compensation to the Contractor for costs in connection with the performance of Work during other than regular work hours. The Commissioner may issue a change order if a delay has occurred and such delay is not the fault of the Contractor, or if the work is of such an important nature that delay in completing such work would result in serious disadvantage to the public.
- B. **PROCEDURE:** The affected Contractor shall (1) obtain whatever permits may be required for performance of the work during other than regular business hours, and (2) pay all necessary fees in connection with such permits. In addition, if directed by the Commissioner, the Contractor shall make immediate application to the Commissioner of the Department of Labor, State of New York, for dispensation in accordance with Subdivision 2 of Section 220 of the Labor Law.

1.15 INTERRUPTION OF SERVICES AT EXISTING FACILITIES:

- A. **EVENING AND WEEKEND WORK** - Where performance of the Work requires the temporary shutdown(s) of services, such shutdown(s) shall be made at night or on weekends or at such times that will cause no interference with the established routines and operations of the facility in question.
1. Where weekend or evening work is required due to unavoidable service shutdowns, such work shall be performed at no extra cost to the City. Components of the Work that must be performed during other than regular work hours are indicated in the Drawings and/or the Specifications.



B. INTERRUPTION OF EXISTING FACILITIES:

1. Each Contractor shall not interrupt any of the services of the facility nor interfere with such services in any way without the permission of the Commissioner. Such interruption or interferences shall be made as brief as possible, and only at such time stated.
2. Under no circumstances shall the Contractor, its subcontractors, or its workers, be permitted to use any part of the project as a shop, without the permission of the Commissioner.
3. Unnecessary noise shall be avoided at all times and necessary noise shall be reduced to a minimum.
4. Toilet facilities, water and electricity must be operational at all times (i.e. 24/7). No services of the facility can be interrupted in any way without the permission of the Commissioner. Careful coordination of all work with the Resident Engineer must be done to maintain the operational level of the project personnel at the facility.
5. The Contractor shall schedule the work to avoid noise interference that will affect the normal functions of the facility. In particular, construction operations producing noises that are objectionable to the functions of the facility must be scheduled at times of day or night, day of the week, or weekend, which will not interfere with personnel at the facility. Any additional cost resulting from this scheduling shall be borne by the Contractor.
6. The Contractor shall arrange to work continuously, including evening and weekend hours, if required, to assure that services will be shut down only during the time actually required to make the necessary connections to the existing facility.
7. The Contractor shall give ample written notice in advance to the Commissioner and personnel at the facility of any required shutdown.

PART II - PRODUCTS (Not Used)

PART III - EXECUTION (Not Used)

END OF SECTION 01 10 00



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MULTIPLE CONTRACT PROJECTS
Issue Date - January 15, 2015

NO TEXT

SUMMARY
01 10 00 -10



SECTION 01 31 00
PROJECT MANAGEMENT AND COORDINATION

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].
- B. LEED: Refer to the Addendum to identify whether this project is designed to comply with a Certification Level according to the U.S. Green Building Council's Leadership in Energy & Environmental Design (LEED) Rating System, as specified in Section 01 81 13, "SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS."
- C. COMMISSIONING: Refer to the Addendum to identify whether this project will be commissioned by an independent third party under separate contract with the City of New York. Commissioning shall be in accordance with ASHRAE and USGBC LEED-NC procedures, as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS. Each Contractor shall cooperate with the commissioning agent and provide whatever assistance is required.

1.2 SUMMARY:

- A. This Section includes administrative provisions for coordinating construction operations on the Project including without limitation the following.
 - 1. Coordination Drawings.
 - 2. Administrative and supervisory personnel.
 - 3. Project meetings.
 - 4. Requests for Interpretation (RFIs).
- B. This section includes the following:
 - 1. Definitions
 - 2. Coordination
 - 3. Submittals
 - 4. Administrative and Supervisory Personnel
 - 5. Project Meetings
 - 6. Requests for Interpretation (RFI's)
 - 7. Correspondence
 - 8. Contractor's Daily Reports
 - 9. Alternate and Substitute Equipment
- C. RELATED SECTIONS: include without limitation the following:
 - 1. Section 01 10 00 SUMMARY
 - 2. Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION
 - 3. Section 01 33 00 SUBMITTALS
 - 4. Section 01 35 26 SAFETY REQUIREMENTS
 - 5. Section 01 73 00 EXECUTION REQUIREMENTS
 - 6. Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL



7. Section 01 77 00

PROJECT CLOSEOUT PROCEDURES

1.3 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.4 COORDINATION:

- A. Coordination: Each Contractor shall coordinate its construction operations, including those of its subcontractors, with other entities to ensure the efficient and orderly installation of each part of the Work. Each Contractor shall coordinate the various operations required by different Sections of the Specifications that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence in order to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to ensure maximum accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
 - 4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.
- B. Each Contractor shall prepare memoranda for distribution to its subcontractors and other involved entities, outlining special procedures required for coordination. Such memoranda shall include required notices, reports, and meeting minutes as applicable.
- C. Administrative Procedures: Each Contractor shall coordinate scheduling and timing of required administrative procedures with other construction activities and activities of its subcontractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include without limitation the following:
 - 1. Preparation of Contractor's Construction Schedule.
 - 2. Installation and removal of temporary facilities and controls.
 - 3. Delivery and processing of submittals.
 - 4. Progress meetings.
 - 5. Pre-installation conferences.
 - 6. Startup and adjustment of systems.
 - 7. Project closeout activities.
- D. Conservation: Each Contractor shall coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
- E. Salvaged Items, Material and/or Equipment: The Specifications may identify certain items, materials or equipment which must be salvaged by each Contractor and handled or disposed of as directed. Each



Contractor shall comply with all directions in the Specifications regarding the salvaging and handling of identified items, material or equipment.

1.5 SUBMITTALS:

- A. Submit shop drawings, product data, samples etc. in compliance with Section 01 33 00, SUBMITTAL PROCEDURES.
- B. Coordination Drawings: Each Contractor shall prepare applicable Coordination Drawings in compliance with the requirements for Integrated Drawings in Section 01 33 00, SUBMITTAL PROCEDURES.
- C. Safety Plan in compliance with Section 01 35 26, SAFETY REQUIREMENTS PROCEDURES.
- D. Waste Management Plan in compliance with Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
- E. Key Personnel Names: Within 15 days after the Notice to Proceed, each Contractor shall submit a list of key personnel assignments of the Contractor and its subcontractors, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in case of the absence of individuals assigned to Project.
 - 1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.
 - 2. In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work. Include special personnel required for coordinating all operations by its subcontractors.

1.6 PROJECT MEETINGS:

- A. General: The Resident Engineer will hold regularly scheduled construction progress meetings at the site, at which time each Contractor and appropriate subcontractors shall have their representatives present to discuss all details relative to the execution of the work. The Resident Engineer shall preside over these meetings.
 - 1. Agenda: Prior to each meeting, the Resident Engineer will consult with the Contractors and will prepare an agenda of items to be discussed. In general, after informal discussion of any item on the agenda, the Resident Engineer will summarize the discussion in a brief written statement, and each Contractor will then dictate a brief statement for the record.
 - 2. Coordination: In addition to construction progress meetings called by the Resident Engineer, the GC Contractor shall hold regularly scheduled meetings for the purpose of coordinating, expediting and scheduling the work of all Contracts in accordance with the master coordinated Job Progress Chart. All Contractors and their subcontractors, material suppliers or vendors whose presence is necessary, are required to attend. These meetings may, at the discretion of the GC Contractor, be held at the same place and immediately following the project meetings held by the Resident Engineer. Minutes of these meetings shall be recorded, typed and printed by the GC Contractor and distributed to all parties concerned.
- B. PRECONSTRUCTION KICK-OFF MEETING:
 - 1. The Resident Engineer will schedule a preconstruction kick-off meeting either at DDC's main office or at the Project site to review responsibilities and personnel assignments and clarify the role of each participant. Unless otherwise directed the Design Consultant will record and distribute meeting minutes.



2. Attendees: Authorized representative of the Client Agency; Design Consultant; each Contractor and their superintendents, subcontractor(s) and their superintendent(s); LEED sub-consultant and Commissioning Authority /Agent (CxA) as applicable and other concerned parties. All participants at the meeting shall be familiar with the Project and authorized to conclude matters relating to the Contract Work.
3. Agenda: Includes without limitation the following as applicable:
 - a. Establishing construction schedule
 - b. Schedule for regular construction meetings
 - c. Phasing
 - d. Critical work sequencing and long-lead items
 - e. Designation of key personnel and their duties
 - f. Reviewing Application for Payment and Change Order Procedures
 - g. Procedures for Requests for Information (RFIs.)
 - h. Review Permits and Approval requirements
 - i. Review all recent Administrative Code reporting requirements relating to the project, (i.e. LL 77, LL86 etc.)
 - j. Procedures for testing and inspecting
 - k. Reviewing special conditions at the Project site
 - l. Distribution of the Contract Documents
 - m. Submittal procedures
 - n. Safety Procedures
 - o. LEED requirements
 - p. Commissioning Requirements
 - q. Preparation of Record Documents
 - r. Historic Treatment requirements
 - s. Use of the premises
 - t. Work restrictions
 - u. Client Agency occupancy requirements
 - v. Responsibility for temporary facilities services and controls
 - w. Construction Waste Management and Disposal
 - x. Indoor Air Quality Management Plan
 - y. Dust Mitigation Plan
 - z. Office, work, and storage areas
 - aa. Equipment deliveries and priorities
 - bb. Security
 - cc. Progress cleaning
 - dd. Working hours

C. CONSTRUCTION PROGRESS MEETINGS:

1. The Resident Engineer will schedule and conduct construction progress meetings at bi-weekly intervals or as otherwise determined. All participants at the meeting shall be familiar with the Project and authorized to conclude matters relating to the Work. Unless otherwise directed, the Design Consultant will record and distribute meeting minutes.



2. Attendees:
 - a. Design Consultant and applicable sub-consultants
 - b. Client Agency Representative
 - c. Representatives from each Contractor, sub-contractor(s), suppliers or other entities involved in the current progress, planning, coordination or future activities of the Work
 - d. Other appropriate DDC personnel, DDC consultants and concerned parties
3. Agenda: Includes without limitation the following:
 - a. Review the Construction Schedule and progress of the Work. Determine if the Work is on time, ahead of schedule or behind schedule. Determine actions to be taken to maintain or accelerate the schedule
 - b. Review and approve prior meeting minutes and follow up open issues
 - c. Coordinate work between each subcontractor
 - d. Sequence of Operations
 - e. Status of submittals, deliveries and off-site fabrication
 - f. Status of inspections and approvals by governing agencies
 - g. Temporary facilities and controls
 - h. Review Site Safety
 - i. Quality and work standards
 - j. Field observations
 - k. Status of correction of deficient items
 - l. RFI's
 - m. Pending changes
 - n. Status of outstanding Payments and Change Orders
 - o. LEED requirements including Construction Waste Management, Indoor Air Quality Plan and Commissioning
 - p. Status of Administrative Code reporting requirements related to the project.

1.7 REQUESTS FOR INFORMATION (RFI):

- A. Procedure: Immediately on discovery of the need for information or interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, the Contractor shall prepare and submit an RFI in the form specified by the Resident Engineer.
 1. RFI shall originate with each Contractor. RFIs submitted by entities other than the Contractor will be returned with no response.
 2. Coordinate and submit RFI in a prompt manner to the Resident Engineer so as to avoid delays in Contractor's work or work of its subcontractors.
 3. RFI Log: Each Contractor shall prepare, maintain, and submit a tabular log of RFIs organized by the RFI number monthly to the Resident Engineer.
 4. On receipt of responses and action to the RFI, the Contractor shall update the RFI log and immediately distribute the RFI response to affected parties. Review response(s) and notify the Resident Engineer immediately if the Contractor disagrees with response(s).

1.8 CORRESPONDENCE:

- A. Copies of all correspondence to DDC shall be sent directly to the Resident Engineer at the job site.



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1.9 CONTRACTOR'S DAILY REPORTS:

- A. Each Contractor shall prepare and submit Daily Construction Progress Reports as outlined in Section 01 32 00, CONSTRUCTION PROGRESS DOCUMENTATION.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 31 00



**SECTION 01 32 00
CONSTRUCTION PROGRESS DOCUMENTATION**

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for establishing an effective base line schedule for the project and documenting the progress of construction during performance of the work by developing, revising as necessary, various documents including but not limited to the following:

1. Baseline Construction Schedule.
2. Composite Schedule for entire project.
3. Recovery Composite Schedule.
4. Revised and/or updated Composite Schedule.
5. Submittals Schedule.
6. Daily construction reports.
7. Material location reports.
8. Field condition reports.
9. Special reports.

- B. RELATED SECTIONS: include without limitation the following:

1. Section 01 10 00 SUMMARY
2. Section 01 32 22 PHOTOGRAPHIC DOCUMENTATION
3. Section 01 33 00 SUBMITTAL PROCEDURES
4. Section 01 40 00 QUALITY REQUIREMENTS

1.3 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.



- C. **Baseline Construction Schedule:**
A horizontal bar chart type schedule (Microsoft Project OR similar program) listing all the activities and their duration for entire contract duration OR construction period, including logical ties and interrelations between the activities necessary for the timely and successful completion of the project. Critical path activities shall be clearly marked. The Baseline construction schedule is a preliminary schedule that must be reviewed and approved by the Resident Engineer.
- D. **Composite Schedule:**
A composite horizontal bar chart type schedule (Microsoft Project OR similar program) listing all activities to be performed by the Contractor and its subcontractors, the duration of each activity including logical ties and interrelations between activities, and the sequence of each of necessary activities for the timely and successful completion of the project within the stipulated contract duration. Critical path activities shall be clearly marked. The Composite schedule must be signed and submitted by the Contractor within thirty (30) calendar days after the date established for commencement of the Contract, unless otherwise directed. The Composite Schedule must be reviewed and approved by the Resident Engineer.
- E. **Recovery Composite Schedule:** A Recovery Composite Schedule is not required unless the City issues an Acceleration Change Order.

A Composite Schedule outlining and incorporating extraordinary efforts required to recover lost time with the aim of achieving completion of the project within the stipulated contract duration, plus authorized time extensions. In such case special attention must be given to keep the delays as minimum as possible and must establish the nature of efforts such as extended hours of work, weekend work, accelerated fabrication, required action(s) or effort(s) by the Contractor, its subcontractors, consultants, clients, end users and/or other concerned parties.

Such schedule must be prepared and submitted within Five (5) calendar days of request by the Resident Engineer. The Recovery Composite Schedule must be reviewed and approved by the Resident Engineer.
- F. **Revised and/or Updated Composite Schedule:**

A Baseline construction schedule OR Composite Schedule OR Recovery Composite Schedule for the project that shows the actual duration of all the completed activities, including duration of and the reasons for delays, if any has occurred, AND revisions to all remaining activities of the Contractor and its subcontractors, including changes, if any, to logical ties, interrelations and the sequence of each of the outlined activities. Any such revisions should be shown on the row just below the approved schedule of the respective activity so that revisions can be compared.

The Revised and/or updated Composite Schedule must be reviewed and approved by the Resident Engineer.
- G. **Activity:** A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
- H. **Event:** The starting or ending point of an activity.
- I. **Fragment:** A part of the activity that breaks down activities into smaller activities for greater detail.
- J. **Milestone:** A key or critical point in time for reference or measurement.
- K. **Network Diagram:** A graphic diagram of a network schedule, showing activities and activity relationships.



PART II – PRODUCTS

2.1 BASELINE CONSTRUCTION SCHEDULE:

- A. Each Contractor shall prepare a preliminary horizontal bar-chart-type construction schedule for the project. Submit the Baseline Construction Schedule to the Resident Engineer within (15) fifteen calendar days after the date established for commencement of the Contract, unless directed otherwise. The Baseline Schedule must be reviewed and approved by the Resident Engineer.
1. Provide a separate time bar for each significant construction activity. Coordinate each activity on the schedule with other construction activities for proper interrelationship & sequence.
 2. Duration: The duration of each activity on the schedule besides installation must clearly show required duration of filing for permits, inspections, testing, approvals, shop drawings and materials submittals and approvals, fabrication, delivery, phasing for each construction activity.
 3. Schedule shall be time-scaled in not more than weekly increments, with the dates of the first day (Monday) of each week indicated.
 4. Completion of all the project activities shall be indicated in advance of the date established for completion of the Contract, allowing time for required inspection and punch list work.
 5. Clearly show time bar for all the tasks, to be completed before start of physical work of scheduled activities, including but not limited to obtaining required permit, subcontractor approval, submission and approval of shop drawings, field verification, time for fabrication and delivery, testing of materials and/or samples, preparation and approval of mock-up sample, curing, pre-testing of soil, pre-testing of equipment - including start up, testing & adjusting, filing for inspection by regulatory agencies, training, final use, etc. required to maintain orderly progress of the activity. A special consideration must be given to those activities requiring early approvals because of long lead-time for manufacture or fabrication.
 6. Phasing: Arrange all activities in proper sequence to reflect requirements for phased completion, work by other entities, work by the City, City furnished items, coordination with existing work, limitations arising due to continued occupancies, non-interruptible services, partial completion for occupancy, site restrictions, provisions for future work, seasonal variations, environmental control, and similar conditions of the project.
 7. Arrange all activities and/or show interrelationship and logical sequence of all activities, determine and mark all critical path activities including any phasing reflecting actual project condition.
 8. Keep at least two blank horizontal bars between all activities for recording actual progress and submitting Revised Schedule as defined in Sub-Section 1.3 G
 9. If necessary a new revised schedule shall be prepared in the same manner as outlined above.

2.2 COMPOSITE SCHEDULE FOR THE PROJECT:

- A. The GC Contractor shall prepare a Composite Schedule based on the approved Baseline Schedule. Such schedule shall indicate graphically and chronologically the start and completion of each and every activity, including all the pre-activity and post activity tasks. Keep at least two blank horizontal bars between all activities for recording actual progress and/or revisions.
1. If necessary the Contractors shall meet with each subcontractor and with the Resident Engineer to review and make warranted adjustments and finalize the Composite Schedule. Once the schedule is finalized, each Contractor shall sign and date a reproducible form of the Composite Schedule. The Composite Schedule must be finalized and signed by each Contractor within (30) thirty calendar days after the date established for commencement of the Contract, unless directed otherwise. The Composite Schedule must be reviewed and approved by the Resident Engineer.



2.3 RECOVERY COMPOSITE SCHEDULE:

- A. A Recovery Composite Schedule is not required unless the City issues an Acceleration Change Order. A Recovery Composite Schedule outlining and incorporating extraordinary efforts required to recover lost time with the aim of achieving completion of the project within the stipulated contract duration, plus authorized time extensions, must be developed and submitted within (5) five calendar days of the request by the Resident Engineer. Such Recovery Composite Schedule shall include all information as defined in Sub-Section 1.3 F and shall be prepared in the same manner as outlined in Sub-Sections 2.1 and 2.2. The Recovery Composite Schedule must be reviewed and approved by the Resident Engineer.

2.4 REVISED AND/OR UPDATED COMPOSITE SCHEDULE:

- A. Each Contractor shall revise and/or update the approved Composite Schedule as directed. The Revised schedule shall be prepared in the same manner as outlined above in Sub-Sections 2.1 and 2.2.
- B. Each Contractor shall mark actual progress, delays, work stoppage etc. in the row just below the approved schedule for the respective activity so that revisions can be compared.
- C. Such schedule also shall indicate graphically and chronologically any revisions to the start and completion of the remaining activities including revisions to all the pre-activity and post activity tasks for all subcontractors.
- D. If necessary, the Contractors shall meet with each subcontractor and with the Resident Engineer to review and make warranted adjustments and finalize the Revised Composite Schedule. Once the schedule is finalized, each Contractor shall sign and date a reproducible form of the Schedule. Such schedule must be prepared and submitted by each Contractor within Five (5) calendar days of request by the Resident Engineer. The Revised Composite Schedule must be reviewed and approved by the Resident Engineer.

2.5 SUBMITTALS SCHEDULE:

- A. Preparation: Each Contractor shall submit a schedule of submittals, arranged in chronological order by dates required by the construction schedule. Include time required for review, re-submittal, ordering, manufacturing, fabrication, and delivery when establishing dates.
- B. SCHEDULE F: Schedule F sets forth all submittal requirements for shop drawings and material samples. Schedule F is included in the Addendum. At the kick-off meeting, each Contractor must review this Schedule with the Resident Engineer and the Design Consultant. Within 10 days after the kick-off meeting, each Contractor must complete information on Schedule F concerning the submission date, the required delivery date and the fabrication time. For all required submittals of shop drawings and material samples, the Schedule F provided by each Contractor must indicate a submission date which is at least 20 business days prior to the date of the manufacture of the item or materials to be installed. In addition, if so directed by the Commissioner, the Schedule F provided by each Contractor must indicate a submission date for shop drawings and/or material samples of specified items or materials which is within 60 business days after the kick-off meeting. In the event of any conflict between the Specifications and Schedule F, Schedule F shall take precedence; provided, however, in the event of an omission from Schedule F (i.e., Schedule F omits either a reference to or information concerning a submittal requirement which is set forth in the Specifications), such omission from Schedule F shall have no effect and each Contractor's submittal obligation, as set forth in the Specifications, shall remain in full force and effect.
- C. Review: The Resident Engineer will review the Schedule F submitted by each Contractor. Upon acceptance, the Resident Engineer will date and sign the schedule as approved and transmit it to the Design Consultant, Contractors and others within DDC as he/she deems appropriate.



2.6 REPORTS:

- A. Daily Construction Reports: Each Contractor shall submit to the Resident Engineer written Daily Construction Reports at the end of each work day, recording basic information such as the date, day, weather conditions, and contract days passed, remaining contract duration/days and the following information concerning the Project:

Information: The reports shall be prepared by each Contractor's Superintendent and shall bear the Contractor's Superintendent's signature. Each report shall contain the following information:

1. List of name of Contractor, subcontractors, their work force in each category, and details of activities performed.
2. The type of materials and/or major equipment being installed by the Contractor and/or by each subcontractor.
3. The major construction equipment being used by the Contractor and/or subcontractors.
4. Material and Equipment deliveries.
5. High and low temperatures and general weather conditions.
6. Accidents.
7. Meetings and significant decisions.
8. Unusual events.
9. Stoppages, delays, shortages, and losses.
10. Meter readings and similar recordings
11. Emergency procedures.
12. Orders and/or requests of authorities having jurisdiction.
13. Approved Change Orders received and implemented.
14. Field Orders and Directives received and implemented.
15. Services connected and disconnected.
16. Equipment or system tests and startups.
17. Partial Completions and occupancies.
18. Substantial Completions authorized.

NOTE: If there is NO ACTIVITY at site, a daily report indicating so and the reason for no activity at the site must be submitted.

- B. Material Location Reports: Each Contractor shall submit a Material Location Report at weekly OR monthly intervals as determined and established by the Resident Engineer. Such report shall include a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.
- C. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit a Request For Information (RFI) form with a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.7 SPECIAL REPORTS:

- A. Accident report, incident report, special condition report for the conditions out of control of any party involved with the project effecting project progress, explaining impact on the project schedule and cost if any.

PART III – EXECUTION (Not Used)

END OF SECTION 01 32 00



NEW YORK CITY DEPARTMENT OF
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Division 01 – DDC STANDARD GENERAL CONDITIONS
MULTIPLE CONTRACT PROJECTS
Issue Date - January 15, 2015

NO TEXT

CONSTRUCTION PROGRESS DOCUMENTATION
01 32 00 - 6



**SECTION 01 32 33
PHOTOGRAPHIC DOCUMENTATION**

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SECTION 01 32 33

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.12 SUMMARY:

- A. This Section includes the following:
1. Photographic Media
 2. Construction Photographs
 3. Pre-construction Photographs
 4. Periodic Construction Progress Photographs
 5. Special Photographs
 6. DVD Recordings
 7. Final Completion Construction Photographs
- B. RELATED SECTIONS: include without limitation the following:
1. Section 01 10 00 SUMMARY
 2. Section 01 33 00 SUBMITTAL PROCEDURES
 3. Section 01 35 91 HISTORIC TREATMENT PROCEDURES
 4. Section 01 78 39 CONTRACT RECORD DOCUMENTS
 5. Section 01 81 19 INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS
- C. PHOTOGRAPHER - The GC Contractor shall employ and pay for the services of a professional photographer who shall take photographs showing the progress of the work for all Contracts.

1.3 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.4 SUBMITTALS:

- A. Qualification Data: For photographer.



- B. Key Plan: With each Progress Photograph Submittal include a key plan of Project site and building with notation of vantage points marked for location and direction of each image. Indicate location, elevation or story of construction. Include same label information as corresponding set of photographs.
- C. Construction Progress Photograph Prints: Take Progress Photographs bi-weekly and submit four color prints of each photographic view for each trade to the Resident Engineer. Such photographs shall be included in each monthly progress report or as otherwise directed by the Resident Engineer.
- D. Construction Photograph Negatives: Submit a complete set of photographic negatives in individually protected negative sleeves with each submittal of prints. Identify negatives with label matching photographic prints.
- E. Digital Images: If Digital Media is used, submit a complete set of digital color image electronic files on CD-ROM with each submittal of prints. Identify electronic media with date photographs were taken. Submit images that have same aspect ratio as the sensor, un-cropped.

1.5 QUALITY ASSURANCE:

- A. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of construction projects for not less than three years.

1.6 COORDINATION:

- A. Each Contractor and its subcontractor(s) shall cooperate with the photographer and provide auxiliary services requested, including access to Project site and use of temporary facilities, including temporary lighting required to produce clear, well-lit photographs without obscuring shadows.

1.7 COPYRIGHT:

- A. The GC Contractor shall include the provisions set forth below in its agreement with the Photographer who will provide the construction photographs described in this section. The GC Contractor shall submit to the Resident Engineer a copy of its agreement with the Photographer.
- B. Any photographs, images and/or other materials produced pursuant to this Agreement, and any and all drafts and/or other preliminary materials in any format related to such items produced pursuant to this Agreement, shall upon their creation become the exclusive property of the City.
- C. Any photographs, images and/or other materials provided pursuant to this Agreement ("Copyrightable Materials") shall be considered "work-made-for-hire" within the meaning and purview of Section 101 of the United States Copyright Act, 17 U.S.C. § 101, and the City shall be the copyright owner thereof and of all aspects, elements and components thereof in which copyright protection might exist. To the extent that the Copyrightable Materials do not qualify as "work-made-for-hire," the Photographer hereby irrevocably transfers, assigns and conveys exclusive copyright ownership in and to the Copyrightable Materials to the City, free and clear of any liens, claims, or other encumbrances. The Photographer shall retain no copyright or intellectual property interest in the Copyrightable Materials. The Copyrightable Materials shall be used by the Photographer for no purpose other than in the performance of this Agreement without the prior written permission of the City. The Department may grant the Photographer a license to use the Copyrightable Materials on such terms as determined by the Department and set forth in the license.
- D. The Photographer acknowledges that the City may, in its sole discretion, register copyright in the Copyrightable Materials with the United States Copyright Office or any other government agency authorized to grant copyright registrations. The Photographer shall fully cooperate in this effort, and agrees to provide any and all documentation necessary to accomplish this.



- E. The Photographer represents and warrants that the Copyrightable Materials: (i) are wholly original material not published elsewhere (except for material that is in the public domain); (ii) do not violate any copyright Law; (iii) do not constitute defamation or invasion of the right of privacy or publicity; and (iv) are not an infringement, of any kind, of the rights of any third party. To the extent that the Copyrightable Materials incorporate any non-original material, the Photographer has obtained all necessary permissions and clearances, in writing, for the use of such non-original material under this Agreement, copies of which shall be provided to the City.

PART II – PRODUCTS

2.1 PHOTOGRAPHIC MEDIA:

- A. Photographic Film: Medium format, 2-1/4 by 2-1/4 inches (60 by 60 mm).
- B. Digital Images:
1. Construction Progress Images: Color images in JPEG format with minimum sensor size of 1.3 megapixels.
 2. Presentation Quality Images: Provide Color images in uncompressed TIFF format, produced by a digital camera with minimum sensor size of 4.0 megapixels, and at an image resolution of not less than 1024 by 768 with 8"x10" original capture at 300 dpi or greater.
- C. Prints:
1. Format: 8-by-10-inch (203-by-254-mm) smooth-surface matte color prints on single-weight commercial-grade stock paper, with 1inch wide margins and punched for standard 3-ring binder.
 2. Identification: On the front of each photograph affix a label in the margin with Project name and date photograph was taken. On the back of each print, provide an applied label or rubber-stamped impression with the following information:
 - a. Project Contract I.D. Number.
 - b. Project Contract Name.
 - c. Name of Contractor. (and Subcontractor Trade Represented)
 - d. Subject of Image Taken.
 - e. Date and time photograph was taken if not date stamped by camera.
 - f. Description of vantage point, indicating location, direction and other pertinent information.
 - g. Unique sequential identifier.
 - h. Name and address of photographer.

PART III – EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS:

- A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
1. Maintain key plan with each set of construction photographs that identifies each photographic location and direction of view.
- B. Film Images:



1. Date Stamp: Unless otherwise indicated, date and time stamp each photograph as it is being taken so stamp is integral to photograph.
 2. Field Office Prints: Retain one set of prints of progress photographs in the field office at Project site, available at all times for reference. Identify photographs same as for those submitted to Commissioner.
- C. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
1. Date and Time: Include date and time in filename for each image.
 2. Field Office Images: Maintain one set of images on CD-ROM in the field office at Project site, available at all times for reference. Identify images same as for those submitted to Commissioner.

3.2 PRE-CONSTRUCTION & PRE-DEMOLITION PHOTOGRAPHS:

- A. Before commencement of Contract work at the site, take color photographs of Project site and surrounding properties, including existing structures or items to remain during construction, from different vantage points, as directed by the Resident Engineer.
1. Flag applicable excavation areas and construction limits before taking construction photographs.
 2. Take photographs of minimum eight (8) views to show existing conditions adjacent to property before starting the Work.
 3. Take applicable photographs of minimum eight (8) views of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
 4. Take additional photographs as required or directed by the Resident Engineer to record settlement or cracking of adjacent structures, pavements, and improvements.
- B. Demolition Operations: Take photographs as directed by the Resident Engineer of minimum of eight (8) views each before commencement of demolition operations, at mid-point of operations and at completion of operations.
- C. Pre-Demolition Photographs: Take archival quality color photographs, to include all exterior building facades, of all structures at the Project site designated to be fully demolished or removed in compliance with NYC Building Code requirements. Submit four (4) complete sets of pre-demolition photographs, in the format specified herein, to the Resident Engineer for submission to the Department of Buildings.

3.3 PERIODIC CONSTRUCTION PROGRESS PHOTOGRAPHS:

- A. Take photographs of minimum eight (8) views bi-weekly as directed by the Resident Engineer of construction progress for each contract trade. Select vantage points to show status of construction and progress since last photographs were taken.

3.4 SPECIAL PHOTOGRAPHS:

- A. The photographer shall take special photographs of subject matter or events as specified in other sections of the Project Specifications from vantage points specified or as otherwise directed by the Resident Engineer.
- B. Historical Elements: As required in Section 01 35 91, HISTORIC TREATMENT PROCEDURES, for Contract work at designated landmark structures the photographer, as specified and required by individual sections of the Contract documents or at the direction of the Commissioner, shall take



images of existing elements scheduled to be removed for replacement, repair or replication in quantities as directed, including post-construction photographs of completed work as directed by the Commissioner.

1. Take Presentation Quality Photographs of designated landmark structures as directed by the Commissioner for submission to the New York City Landmarks Preservation Commission. Provide a minimum of four color photographic prints of each view as directed.

3.5 DVD RECORDING:

- A. When DVD Recording of Demonstration and Orientation sessions is required the GC Contractor shall provide the services of a Videographer as indicated in Section 01 79 00, DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION, and Section 01 91 13 GENERAL COMMISSIONING REQUIREMENTS.

3.6 FINAL COMPLETION CONSTRUCTION PHOTOGRAPHS:

- A. Take color photographs of minimum eight (8) unobstructed views of the completed project or project and site, as directed by the Commissioner and after all scaffolding, hoists, shanties, field offices or other temporary work has been removed and final cleaning is done after date of Substantial Completion for submission as Project Record Documents. Submit four (4) sets of each view of Presentation Quality photographic prints including negatives and/or digital images electronic file

END OF SECTION 01 32 33



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Division 01 – DDC STANDARD GENERAL CONDITIONS
MULTIPLE CONTRACT PROJECTS
Issue Date - January 15, 2015

NO TEXT

PHOTOGRAPHIC DOCUMENTATION
01 32 33 - 6



**SECTION 01 33 00
SUBMITTAL PROCEDURES**

PART I – GENERAL:

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract]

1.2 SUMMARY:

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Coordination Drawings, Catalogue Cuts, Material Samples and other submittals required by the Contract Documents.
- B. Review of submittals does not relieve the Contractor of responsibility for any Contractor's errors or omissions in such submittals, nor from responsibility for complying with the requirements of the Contract.
- C. Responsibility of the Contractor: The approval of Shop Drawings will be general and shall not relieve the Contractor of responsibility for the accuracy of such Shop Drawings, nor for the proper fitting and construction of the work, nor of the furnishing of materials or work required by the Contract and not indicated on the Shop Drawings. Approval of Shop Drawings shall not be construed as approving departures from the Contract Drawings, Supplementary Drawings or Specifications.
- D. This Section includes the following:
1. Definitions
 2. Submission Procedures
 3. Coordination Drawings
 4. LEED Submittals
 5. Ultra Low Sulfur Diesel Fuel Reporting
 6. Construction Photographs and DVD Recordings
 7. As-Built Documents

1.3 RELATED SECTIONS: Include without limitation the following:

- | | | |
|----|------------------|--|
| A. | Section 01 10 00 | SUMMARY |
| B. | Section 01 31 00 | PROJECT MANAGEMENT AND COORDINATION |
| C. | Section 01 32 00 | CONSTRUCTION PROGRESS DOCUMENTATION |
| D. | Section 01 32 33 | PHOTOGRAPHIC DOCUMENTATION |
| E. | Section 01 77 00 | CLOSEOUT PROCEDURES |
| F. | Section 01 78 39 | CONTRACT RECORD DOCUMENTS |
| G. | Section 01 81 13 | SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS |

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.



- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.
- C. Submittals: Written and graphic information that requires responsive actions and includes without limitation all shop drawings, product data, letters of certification, tests and other information required for quality control and as required by the Contract Documents.
- D. Informational Submittals: Written information that does not require responsive action. Submittals may be rejected for non-compliance with the Contract.
- E. Shop Drawings: Include drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data, except for coordination drawings, specifically prepared for the project by the Contractor or any subcontractor, manufacturer, supplier or distributor, which illustrates how specific portions of the work shall be fabricated and/or installed.
- F. Coordination Drawings: As required in Section 01 31 00 PROJECT MANAGEMENT AND COORDINATION.
- G. Product Data and Quality Assurance Submittals: Includes manufacturer's standard catalogs, pamphlets and other printed materials including without limitation the following:
 - 1. Catalogue and Product specifications
 - 2. Installation instructions
 - 3. Color charts
 - 4. Catalog cuts
 - 5. Rough-in diagrams and templates
 - 6. Wiring diagrams
 - 7. Performance curves
 - 8. Operational range diagrams
 - 9. Mill reports
 - 10. Design data and calculations
 - 11. Certification of compliance or conformance
 - 12. Manufacturer's instructions and field reports

1.5 INTEGRATED DRAWINGS:

- A. The GC Contractor shall provide to the HVAC Contractor reflected ceiling starting points or plans, showing beam soffits elevations, ceiling heights, roof openings, etc.
- B. The HVAC Contractor shall prepare a 3/8 inch scale drawing or drawings showing ductwork, heating and sprinkler piping. This drawing shall include location of grilles, registers, etc. and access doors in hung ceilings. Location shall be fixed by elevations and dimensions from column center lines and/or walls.
- C. The HVAC Contractor shall prepare and issue a 3/8 inch scale original reproducible drawing or drawings of the above to the GC Contractor and a print of same to the Resident Engineer.
- D. The GC Contractor shall lay out on the original reproducible drawing, the reflected ceiling plan, beam soffit elevations, ceiling heights, roof opening, etc. and issue the original reproducible drawing to the Plumbing Contractor, and a print of same to the Resident Engineer.



- E. The Plumbing Contractor shall lay out on the original reproducible drawing its piping, valves, cleanouts, etc., indicating locations and elevations and shall indicate the necessary access doors, and issue the original reproducible drawing to the Electrical Contractor and print of same to the Resident Engineer.
- F. The Electrical Contractor shall indicate on the original reproducible drawing its fixtures, large conduit runs, clearances, pull boxes, junction boxes, sound system speakers, etc., and issue the original reproducible drawing to the Resident Engineer.
- G. The Resident Engineer will call as many meetings with each Contractor as are necessary to resolve any conflicts that become apparent. The Resident Engineer will call on the services of the Design Consultant where necessary.
- H. Upon resolution of the conflicts, the HVAC Contractor shall provide a reproducible drawing of the coordinated drawing or drawings, which will become the Master Integrated Drawing. The Master Integrated Drawing shall be signed by each Contractor to indicate its acceptance of the arrangement of the work.
- I. A reproducible copy of the Master Integrated Drawing or Drawings will be provided by the HVAC Contractor to each Contractor, the Resident Engineer and to the Design Consultant for information.
- J. Each Contractor shall prepare its Shop Drawings in accordance with the Master Integrated Drawings. No work will be permitted without approved Shop Drawings. It is therefore essential that this procedure be instituted as quickly as possible.
- K. Each Contractor shall be held strictly accountable for cooperation in preparing the Integrated Drawing or Drawings.

1.6 SUBMITTAL PROCEDURES:

- A. Refer to Section 01 35 03 GENERAL MECHANICAL REQUIREMENTS and Section 01 35 06 GENERAL ELECTRICAL REQUIREMENTS for additional submittal requirements involving electrical and mechanical work or equipment of any nature called for the project.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activities, with the Submittal Schedule specified in Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION.
 - 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - 3. The Commissioner reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Submittals Schedule: The Submittals Schedule is set forth in Schedule F, which is included in the Addendum.
- D. Identification: Place a permanent label or title block on each submittal for identification.
 - 1. Indicate name of firm or entity that prepared each submittal on label or title block.
 - 2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Design Consultant.
 - 3. Include the following minimum information on label for processing and recording action taken:
 - a. Project name, DDC Project Number and Contract Number
 - b. Date.



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- c. Name and address of Design Consultant.
- d. Name and address of Contractor.
- e. Name and address of subcontractor.
- f. Name and address of supplier.
- g. Name of manufacturer.
- h. Submittal number or other unique identifier, including revision identifier.
- i. Number and title of appropriate Specification Section.
- j. Drawing number and detail references, as appropriate.
- k. Location(s) where product is to be installed, as appropriate.
- l. Other necessary identification.

E. Transmittal:

1. Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form in triplicate. Transmittals received from sources other than the Contractor will be returned without review. Re-submission of the same drawings or product data shall bear the original number of the prior submission and the original titles.
2. Transmittal Form: Provide locations on form for the following information:
 - a. Project name, DDG Project number and Contract Number
 - b. Date
 - c. Destination (To:).
 - d. Source (From:)
 - e. Names of Contractor, subcontractor, manufacturer, and supplier
 - f. Category and type of submittal.
 - g. Submittal purpose and description.
 - h. Specification Section number and title.
 - i. Drawing number and detail references, as appropriate.
 - j. Transmittal number, numbered consecutively.
 - k. Submittal and transmittal distribution record.
 - l. Remarks.
 - m. Signature of transmitter.

F. Shop Drawings:

1. Procedures for Preparing, Forwarding, Checking and Returning all Shop Drawings shall be, generally, as follows:
 - a. Each Contractor shall make available to its subcontractors the necessary Contract Documents and shall instruct such subcontractors to determine dimensions and conditions in the field, particularly with reference to coordination between the trade subcontractors. The Contractor shall direct its subcontractors to prepare Shop Drawings for submission to the Design Consultant in accordance with the requirements of these General Conditions. The Contractor shall also direct its subcontractors to "Ring Up" corrections made on all re-submissions for approval, so as to be readily seen, and that the symbol "sub" be used to identify the source of the correction or information that has been added.

The Contractor shall:

1. Review and be responsible to the Commissioner, for information shown on its subcontractor's Shop and Installation drawings and manufacturers' data, and also for conformity to Contract Documents.
2. "Ring Up" corrections made on all submissions for approval, so as to be readily seen, and that the symbol "GC", "PL", "HVAC" or "EL" be used to indicate that the correction and/or information added was made by the Contractor and/or its subcontractor(s).



3. Clearly designate which entity is to perform the work when the term, "work by others" or other similar phrases are indicated on the Contract Drawings before submission to the Design Consultant.
4. Stamp submissions "Recommended for Acceptance", date and forward to the Design Consultant.
2. Each Contractor shall promptly prepare and submit project specific layout detail and Shop Drawings of such parts of the work as are indicated in the Specifications, Schedule F of the Addendum or as required. These Shop Drawings shall be made in accordance with the Contract Drawings, Specifications and Supplementary Drawings, if any. The Shop Drawings shall be accurate and distinct and give all the dimensions required for the fabrication, erection and installation of the work.
3. Size of Drawings: The Shop Drawings, unless otherwise directed, shall be on sheets of the same size as the Contract Drawings, drawn accurately and of sufficient scale to be legible, with a one half (1/2) inch marginal space on each side and a two (2) inch marginal space for binding on the left side.
4. Scope of Drawings: Shop Drawings shall be numbered consecutively and shall accurately and distinctly represent all aspects of the work, including without limitation the following:
 - a. All working and erection dimensions.
 - b. Arrangements and sectional views.
 - c. Necessary details, including performance characteristics, and complete information for making necessary connections with other work.
 - d. Kinds of materials including thickness and finishes.
 - e. Identification of products.
 - f. Fabrication and installation drawings.
 - g. Roughing-in and setting diagrams.
 - h. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
 - i. Shop work manufacturing instructions.
 - j. Templates and patterns.
 - k. Schedules.
 - l. Design calculations.
 - m. Compliance with specified standards.
 - n. Notation of coordination requirements.
 - o. Notation of dimensions established by field measurement.
 - p. Relationship to adjoining construction clearly indicated.
 - q. Seal and signature of professional engineer if specified.
 - r. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
 - s. All other information necessary for the work and/or required by the Commissioner.
5. Titles and Reference: Shop Drawings shall be dated and contain:
 - a. Name of the Project, DDC Project Number and Contract Number.
 - b. The descriptive names of equipment, or materials covered by the Contract Drawings and the classified item number or numbers, if any, under which it is, or they are required.
 - c. The locations or points and sequence at which materials, or equipment, are to be installed in the work.
 - d. Cross references to the section number, detail number and paragraph number of the Contract Specifications.
 - e. Cross references to the sheet number, detail number, etc., of the Contract Drawings.
6. Field Measurements: In addition to the above requirements, the Shop Drawings shall be signed by the Contractor responsible for preparation of the shop drawings and, if applicable, the subcontractor responsible for preparation of the Shop Drawings. Each Shop Drawing shall be stamped with the following wording:



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FIELD MEASUREMENTS: The Contractor certifies that it has verified and supplemented the Contract Drawings by taking all required field measurements, which said measurements correctly reflect all field conditions and that this Shop Drawing incorporates said measurements.

7. **Contractor's Statement with Submittal:** Any Submittal by the Contractor for acceptance, including without limitation, all dimensional drawings of equipment, blueprints, catalogues, models, samples and other data relative to the equipment, the materials, the work or any part thereof, must be accompanied by a statement that the Submittal has been examined by the Contractor and that everything shown in the Submittal is in accordance with the requirements of the Contract Drawings and Specifications. If there is any discrepancy between what is shown in the Submittal and the requirements of the Contract Drawings and Specifications, the Contractor shall, in its statement, list and clearly describe each such discrepancy.

Acceptance will be given based upon the Contractor's representation that what is shown in the Submittal is in accordance with the requirements of the Contract Drawings and Specifications. If the Contractor's statement indicates any discrepancy between what is shown in the Submittal and the requirements of the Contract Drawings and Specifications, such change is subject to review and prior written acceptance by the Design Consultant. In addition, such change may require a change order in accordance with Article 25 of the Contract. In the event any such change is approved, any additional expense or increased cost in connection with the change is the sole responsibility of the Contractor.

8. **Submission of Shop Drawings:**

- a. **Initial Submission:** Each Contractor shall submit seven (7) copies of each Shop Drawing to the Design Consultant for his/her review and acceptance. The Design Consultant will transmit Shop Drawings to appropriate sub-consultants for review and acceptance, including Commissioning Authority/Agent as applicable. A satisfactory Shop Drawing will be stamped "No Exceptions Taken", be dated and distributed by the Design Consultant as follows:
- 1) Two (2) copies thereof will be returned to the Contractor by letter.
 - 2) Three (3) copies of the approved Shop Drawing and copy of the transmittal letter to the Contractor will be forwarded to DDC.
 - 3) One copy will be retained by the Design-Consultant.
 - 4) One copy will be forwarded / retained by sub-consultant(s) as appropriate.

Should the Shop Drawing(s) be "Rejected" or noted "Revise and Resubmit" by the Design Consultant, the Design Consultant will return the Shop Drawings to the Contractor with the necessary corrections and changes to be made as indicated thereon.

- b. **Revisions:** Each Contractor must make such corrections and changes and again submit seven (7) copies of each shop drawing to the Design Consultant. The Contractor shall revise and resubmit the Shop Drawing as required by the Design Consultant until the Shop Drawings are stamped "No Exceptions Taken". However, Shop Drawings which have been stamped "Make Corrections Noted" shall be considered an "Acceptable" Shop Drawing and NEED NOT be resubmitted.
- c. **Commencement of Work:** No work or fabrication called for by the Shop Drawings shall be done until the acceptance of the said drawings by the Design Consultant is given. In addition to the foregoing Shop Drawing transmissions, a copy of any Shop Drawing prepared by any of the Contractors or the Contractor's subcontractors which Shop Drawing indicated work related to, adjacent to, impinging upon, or affecting work to be done by other subcontractors shall be transmitted to the Contractor and subcontractors so affected. [These accepted Shop Drawings shall be distributed to the affected Contractor and subcontractors when required with a copy of the transmittal to the Resident Engineer.]



- d. Variations: If the Shop Drawings show variations from the Contract requirements because of standard shop practice or other reasons, the Contractor shall make specific mention of such variations in its letter of submittal. Acceptance of the Shop Drawings shall constitute acceptance of the subject matter thereof only and not of any structural apparatus shown or indicated.
- G. Product Data:
1. General: Except as otherwise prescribed herein, the submission, review and acceptance of Product Data and Catalogue cuts shall conform to the procedures specified in Sub-Section 1.6 F, Shop Drawings.
 2. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
 3. Mark each copy of each submittal to show which products and options are applicable.
 4. Include the following information, as applicable:
 - a. Manufacturer's written recommendations.
 - b. Manufacturer's product specifications.
 - c. Manufacturer's installation instructions.
 - d. Standard color charts.
 - e. Manufacturer's catalog cuts.
 - f. Wiring diagrams showing factory-installed wiring.
 - g. Printed performance curves.
 - h. Operational range diagrams.
 - i. Mill reports.
 - j. Standard product operation and maintenance manuals.
 - k. Compliance with specified referenced standards.
 - l. Testing by recognized testing agency.
 - m. Application of testing agency labels and seals.
 - n. Notation of coordination requirements.
 5. Submit Product Data before or concurrent with Samples.
 6. Submission of Product Data:
 - a. Initial Submission: Each Contractor shall submit seven (7) sets of Product Data to the Design Consultant for his/her review and acceptance. The Design Consultant will transmit Product Data to appropriate sub-consultants for review and acceptance, including Commissioning Authority/Agent as applicable. A satisfactory catalogue cut will be stamped "No Exception Taken", be dated and distributed as follows:
 - 1) Two (2) copies thereof will be returned to the Contractor by letter.
 - 2) Three (3) copies of the Product Data and copy of the transmittal letter to the Contractor will be forwarded to DDC
 - 3) One copy will be retained by the Design Consultant.
 - 4) One copy will be forwarded / retained by sub-consultant(s) as appropriate.Should the Product Data be "Rejected" or noted "Revise and Resubmit" by the Design Consultant, the Design Consultant will return one (1) set of such Product Data to the Contractor with the necessary corrections and changes to be made indicated and one (1) set to DDC.
 7. Revisions: Each Contractor must make such corrections and changes and again submit seven (7) copies of each Product Data for the review of the Design Consultant. The Contractor shall revise and resubmit the Product Data as required by the Design Consultant until the submission is



stamped "No Exceptions Taken" by the Design Consultant. However, Product Data which has been stamped "Make Corrections Noted" shall be considered an "Accepted" Product Data and NEED NOT be resubmitted.

H. Samples of Materials:

1. For samples of materials involving electrical work of any nature, refer to Section 00 35 06 - General Electrical Requirements.
2. Samples shall be in triplicate, of sufficient size to show the quality, type, range of color, finish and texture of the material.
3. Each of the samples shall be labeled as follows:
 - a. Name of the Project, DDC Project Number and Contract Number.
 - b. Name and quality of the material.
 - c. Date.
 - d. Name of Contractor, subcontractor, manufacturer and supplier.
 - e. Related Specification or Contract Drawing reference to the samples submitted.
4. A letter of transmittal, in triplicate, from the Contractor requesting acceptance must accompany all such samples.
5. Transportation charges to the Design Consultant's office must be prepaid on all samples forwarded.
6. Samples for testing purposes shall be as required in the Specifications.
7. Samples on Display: When samples are specified to be equal to approved product, they shall be carefully examined by the Contractor and by those whom the Contractor expects to employ for the furnishing of such materials.
8. Timely Submissions Log/Schedule: Samples shall be submitted in accordance with approved Shop Drawing log so as to permit proper consideration without delaying any operation under the project. Materials should not be ordered until acceptance is received, in writing, from the Design Consultant. All materials shall be furnished equal in every respect to the accepted samples.
9. The Acceptance of any samples will be given as promptly as possible, and shall be only for the characteristic color, texture, strength, or other feature of the material named in such approval, and no other. When this approval is issued by the Design Consultant, it is done with the distinct understanding that the materials to be furnished will fully and completely comply with the Specifications, the determination of which may be made at some later date by a laboratory test or by other procedure. Use of materials will be permitted only so long as the quality remains equal to the approved samples and complies in every respect with the Specifications, and the colors and textures of the samples on file in the office of the Design Consultant, for the project.
10. Acceptability of test Data: The Commissioner will be the final judge as to acceptability of laboratory test data and performance in service of materials submitted.
11. Valuable Samples: Valuable samples, such as hardware, plumbing and electrical fixtures, etc., not destroyed by inspection or test, will be returned to the Contractor and may be incorporated into the work after all questions of acceptability have been settled, providing suitable permanent records are made as to the location of the samples, their properties, etc.
12. Equivalent Quality: Any material, article and/or equipment which is designated in the Drawings and/or Specifications by a number in the catalogue of any manufacturer or by a manufacturer's grade or trade name is designated for the purpose of describing the material, article and/or equipment and fixing the standard of performance and/or function, as well as the quality and/or finish. Any material, article and/or equipment which is other than what is specified in the Drawings



and/or Specifications will only be accepted if the Commissioner makes a written determination that such material, article and/or equipment is equivalent to that which is specified in the Drawings and/or Specifications.

13. The submission of any material, article and/or equipment as the equal of any material, article and/or equipment set forth in the Drawings and/or Specifications as a standard shall be accompanied by any and all information essential for determining whether such proposed material, article and/or equipment is equivalent to that which is specified. Such information shall include, without limitation, illustrations, drawings, descriptions, catalogues, records of tests, samples, as well as information regarding the finish, durability and satisfactory use of such proposed material, article and/or equipment under similar operating conditions.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 1.7

1.7 LEED SUBMITTALS:

- A. Comply with submittal requirements specified in Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL; Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS; Section 01 81 13.13, VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS FOR LEED BUILDINGS; Section 01 81 19, INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS and Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS.
- B. LEED Building submittal information shall be assembled into one package per each applicable specification section, separate from all other non-LEED submittals. Each submittal package shall have a separate transmittal and identification as described in Sub-Section 1.6 herein.
- C. Number of Copies: Submit FOUR (4) copies of LEED submittals, in accordance with procedure described in Sub-Section 1.6 herein, unless otherwise indicated.
- D. Material Safety Data Sheets (MSDSs) for LEED Certification: Submit information necessary to show compliance with LEED certification requirements, which will be the limit of the Design Consultant's review for LEED compliance.
 1. Designated LEED submittals that include non-LEED MSDS data will not be reviewed. The entire submittal will be returned for re-submission.

1.8 ULTRA LOW SULFUR DIESEL FUEL AND BEST AVAILABLE TECHNOLOGY REPORTING:

- A. In accordance with Section 01 10 00 Summary, Sub-Section 1.13E, each Contractor shall submit reports to the Commissioner regarding the use of Ultra Low Sulfur Diesel Fuel and Best Available Technology (BAT) in Non road Vehicles. Submission of such reports shall be in accordance with the schedule, format, directions and procedures established by the Commissioner.

1.9 CONSTRUCTION PHOTOGRAPHS AND DVD RECORDINGS:

- A. Submit construction progress photographs and DVD recordings in accordance with requirements of Section 01 32 33, PHOTOGRAPHIC DOCUMENTATION



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1.10 AS-BUILT DOCUMENTS:

- A. Submit all as-built documents in accordance with Section 01 78 39 CONTRACT RECORD DOCUMENTS.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 33 00

SUBMITTAL PROCEDURES
01 33 00 - 10



**SECTION 01 35 03
GENERAL MECHANICAL REQUIREMENTS**

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 35 03

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract]

1.2 SUMMARY:

- A. The General Mechanical Requirements contained herein shall be followed by all Contractors furnishing mechanical equipment under their respective contracts. This Section sets forth the General Requirements applicable to mechanical work for the Project. Such requirements are intended to be read in conjunction with the Specifications and Contract Drawings for the Project. In the event of any conflict between the requirements set forth in this Section and the requirements of the Specifications and/or the Contract Drawings, whichever requirement is the most stringent, as determined by the Commissioner, shall take precedence.

1.3 RELATED SECTIONS: Include without limitation the following:

- | | | |
|----|------------------|---------------------------------|
| A. | Section 01 10 00 | SUMMARY |
| B. | Section 01 33 00 | SUBMITTAL PROCEDURES |
| C. | Section 01 35 06 | GENERAL ELECTRICAL REQUIREMENTS |
| D. | Section 01 42 00 | REFERENCES |
| E. | Section 01 77 00 | CLOSEOUT PROCEDURES |
| F. | Section 01 78 39 | CONTRACT RECORD DOCUMENTS |

1.4 DEFINITIONS:

- A. **CONCEALED PIPING AND DUCTS** - shall mean piping and ducts hidden from sight in masonry or other construction, in floor fill, trenches, partitions, hung ceilings, furred spaces, pipe shafts and in service tunnels not used for passage. Where piping and ducts run in areas that have hung ceilings, such piping and ducts shall be installed in the hung ceilings. For work on existing piping any insulation on such existing piping is to be tested for asbestos and abated, if found to be positive by a certified asbestos contractor. Such testing and abatement shall occur prior to the performance of any work on these pipes.

1.5 SUBMITTALS:

- A. **INTENT OF MECHANICAL CONTRACT DRAWINGS** – Mechanical Contract Drawings are in part diagrammatic and show the general arrangement of the equipment, ducts and piping included in the Contract and the approximate size and location of the equipment.
- B. The HVAC Contractor shall follow these Contract Drawings in laying out the work and verify the spaces in which it will be installed. The HVAC Contractor shall submit, as directed, Mechanical Shop Drawings, roughing drawings, manufacturer's Shop Drawings, field drawings, cuts, bulletins, etc., of all materials, equipment and methods of installation shown or specified in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.



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1. Submit sheet metal shop standards. Submit manufacturer's product data including gauges, materials, types of joints, scaling materials and installations for metal ductwork materials and products.
2. Submit scaled layout drawing (3/8"=1') of metal ductwork and fittings including, but not limited to, duct sizes, locations, elevations, slopes of horizontal runs, wall and floor penetrations and connections. Show modifications of indicated requirements made to conform to local shop practice and how those modifications ensure that free area, materials and rigidity are not reduced. Layouts should include all the room plans, mechanical equipment rooms and penthouses. Method of attachment of duct hangers to building construction all with the support details. Coordinate shop drawings with related trades prior to submission.
3. Indicate duct fittings, particulars such as gauges, sizes, welds and configuration prior to start of work for low-pressure systems.
4. Submit maintenance data and parts lists for metal ductwork materials and products. Include this data, product data and shop drawings in maintenance manual.

1.6 ACCESSIBILITY:

All work shall be installed by the HVAC Contractor so as to be readily accessible for inspection, operation, maintenance and repair. Minor deviations from the arrangement indicated on the Contract Drawings may be made to accomplish this, but they shall not be made without approval by the Commissioner.

1.7 CHANGES IN PIPING, DUCTS, AND EQUIPMENT:

Wherever field conditions are such that for proper execution of the work, reasonable changes in location of piping, ducts and equipment are necessary and required, the HVAC Contractor shall make such changes as directed and approved, without extra cost to the City.

1.8 CLEANING OF PIPING, DUCTS, AND EQUIPMENT:

Piping, ducts and equipment shall be thoroughly cleaned by the HVAC Contractor of all dirt, cuttings and other foreign substances. Should any pipe, duct or other part of the several systems be obstructed by any foreign matter, the HVAC Contractor will be required to pay for disconnecting, cleaning and reconnecting wherever necessary for the purpose of locating and removing obstructions. The Contractor shall pay for repairs to other work damaged in the course of removing obstructions. For work on existing piping, ducts and equipment the HVAC Contractor shall pay special attention during this task so as not to disturb the insulation on such piping, ducts or equipment.

1.9 STANDARDIZATION OF SIMILAR EQUIPMENT:

Unless otherwise particularly specified, all equipment of the same kind, type or classification, and used for identical purposes, shall be the product of one (1) manufacturer.

1.10 SUPPORTING STRUCTURES DESIGNED BY THE CONTRACTOR:

Unless otherwise specified, supporting structures for equipment to be furnished by the HVAC Contractor shall be designed by an Engineer licensed in New York State retained by the GC Contractor. Supporting structures shall be built by the GC Contractor of sufficient strength to safely withstand all stresses to which they may be subjected, within permissible deflections, and shall meet the following standards:

- A. Structural Steel - ASTM Standard Specifications, AISC and New York City Construction Codes.
- B. Concrete for supports for equipment shall conform to the Specifications for concrete herein, but in no case shall be less than the requirements of the New York City Construction Codes for average concrete.



- C. Steel reinforcement for concrete shall be of intermediate grade and shall meet the requirements of the Standard Specifications for Billet Steel-Concrete Reinforcement Bars, ASTM.
- D. Drawings and calculations shall be submitted for review and acceptance in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

1.11 ELIMINATION OF NOISE:

- A. All systems and/or equipment provided under the Contract shall operate without objectionable noise or vibration.
- B. Should operation of any one or more of the several systems produce noise or vibration which is, in the opinion of the Commissioner, objectionable, the HVAC Contractor shall at its own expense make changes in piping, equipment, etc. and do all work necessary to eliminate objectionable noise or vibration.
- C. Should noise or vibration found objectionable by the Commissioner be transmitted by any pipe or portions of the structure from systems and/or equipment installed under the Contract, the HVAC Contractor shall at its own expense install such insulators and make such changes in or additions to the installations as may be necessary to prevent transmission of this noise or vibration.

1.12 PRELIMINARY FIELD TEST:

As soon as conditions permit, the HVAC Contractor shall furnish all necessary labor and materials for, and shall make, preliminary field tests of the equipment to ascertain compliance with the requirements of the Contract. If the preliminary field tests disclose equipment that does not comply with the Contract, the HVAC Contractor shall, prior to the acceptance test, make all changes, adjustments and replacements required.

1.13 INSTRUCTIONS ON OPERATION:

At the time the equipment is placed in permanent operation by the City, the HVAC Contractor shall make all adjustments and tests required by the Commissioner to prove that such equipment is in proper and satisfactory operating condition. The HVAC Contractor shall instruct the City's operating personnel on the proper maintenance and operation of the equipment for the period of time called for in the Specifications.

1.14 CERTIFICATES:

On completion of the work, the HVAC Contractor shall obtain certificates of inspection, approval, acceptance and of compliance with all laws from all agencies and/or entities having jurisdiction over the work and shall deliver these certificates to the Commissioner in accordance with Section 01 77 00 CLOSEOUT PROCEDURES. The work shall not be deemed substantially complete until the certificates have been delivered.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 35 03



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NO TEXT

GENERAL MECHANICAL REQUIREMENTS
01 35 03 - 4



SECTION 01 35 06
GENERAL ELECTRICAL REQUIREMENTS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract]

1.2 SUMMARY:

- A. This Section sets forth the General Requirements applicable to electrical work for the Project. Such requirements are intended to be read in conjunction with the Specifications and Contract Drawings for the Project. In the event of any conflict between the requirements set forth in this Section and the requirements of the Project Specifications and/or the Contract Drawings, whichever requirement is the most stringent, as determined by the Commissioner, shall take precedence.
- B. This Section includes the following:
1. Procedure for Electrical Approval
 2. Submittals
 3. Electrical Installation Procedures
 4. Electrical Conduit System Including Boxes (Pull, Junction and Outlet)
 5. Electrical Wiring Devices
 6. Electrical Conductors and Terminations
 7. Circuit Protective Devices
 8. Distribution Centers
 9. Motors
 10. Motor Control Equipment
 11. Schedule of Electrical Equipment

1.3 RELATED SECTIONS: Include without limitation the following:

- | | | |
|----|------------------|---------------------------------|
| A. | Section 01 10 00 | SUMMARY |
| B. | Section 01 33 00 | SUBMITTAL PROCEDURES |
| C. | Section 01 35 03 | GENERAL MECHANICAL REQUIREMENTS |
| D. | Section 01 42 00 | REFERENCES |
| E. | Section 01 77 00 | CLOSEOUT PROCEDURES |
| F. | Section 01 78 39 | CONTRACT RECORD DOCUMENTS |

1.4 DEFINITIONS:

- A. **WIRING:** means both wire and raceway (rigid steel, heavy wall conduit unless specifically indicated otherwise).



- B. **POWER WIRING:** means wiring from a panelboard or other specified source to a starter (if required) then to a disconnect (if required), then to the final point of usage such as a motor, unit or device.
- C. **CONTROL and/or INTERLOCK WIRING:** means that wiring that signals the device to operate or shut down in response to a signal from a remote control device such as a temperature, smoke, pressure, float, etc. device (starters and disconnect switches are not included in this definition) regardless of the voltage required for the controlling device.
- D. **RIGID STEEL CONDUIT:** shall mean rigid steel, heavy wall conduit that is hot dipped galvanized inside and outside. The conduit shall meet the requirements of the latest edition, as amended, of the "Standard for Rigid Steel Conduit" of the Underwriters' Laboratories, Inc. Unless otherwise specified in the Specifications or indicated on the Contract Drawings, rigid steel conduit shall be used for all exposed work, for all underground conduits in contact with earth and for fire alarms systems, as required by the New York City Construction Codes.
- E. **ELECTRICAL METALLIC TUBING (EMT):** shall mean industry standard thin wall conduit of galvanized steel only. All elbows, bends, couplings and similar fittings which are installed as a part of the conduit system shall be compatible for use with electric metallic tubing. Couplings and terminating fittings shall be of the pressure type as approved by the Commissioner. Set screw fittings will not be acceptable. EMT shall meet the requirements of the latest edition, as amended, of the "Standard for Electrical Metallic Tubing of the Underwriters Laboratories Inc." EMT may only be used where specifically indicated. In no case will EMT be permitted in spaces other than hung ceilings and dry wall partitions.
- F. **FLEXIBLE METALLIC CONDUIT (FMC):** Shall mean a conduit made through the coiling of a self interlocking ribbed strip of aluminum or steel, forming a hollow tube through which wires can be pulled. For final connections to motors and motorized equipment, not more than a 4' - 0" length of flexible conduit may be used. For watertight installations, this conduit shall be of a watertight type, attached with watertight glands or fittings for final connections from outlet box to recessed lighting fixtures and in locations only where specifically permitted by the Specifications or Contract Drawings.

1.5 **PROCEDURE FOR ELECTRICAL APPROVAL:**

This Sub-Section sets forth General Electrical information, as well as required approvals for all electrical work required for the Project, including ancillary electrical work which may be included in the work for other than the Contract for Electrical Work.

- A. **ELECTRIC SERVICE:** The electric service supply is subject to commercial and operating variation of the utility company. Proper provision shall be made to have all apparatus operate normally under these conditions.
- B. **ACCEPTANCE:** Acceptance and approval of the work will be contingent upon the inspection and test of the installation by the City regulatory agency.
- C. **TESTS:** The Electrical Contractor shall notify the Commissioner when the Electrical Contractor has completed the work and is ready to have it inspected and tested. Upon completion of the work tests shall be made as required by the Commissioner of all electrical materials, electrical and associated mechanical equipment, and of appliances installed hereunder. The Electrical Contractor shall furnish all labor and material for such tests. Should the tests show that any of the material, appliances or workmanship is not first class or not in compliance with the Contract, the Electrical Contractor on written notice shall remove and promptly replace them with other materials in conformity with the Contract.
- D. **CERTIFICATE OF THE BUREAU OF ELECTRICAL CONTROL, OF THE DEPARTMENT OF BUILDINGS (B.E.C.):** The Electrical Contractor must file prior to requesting a substantial completion inspection a Certificate of Inspection issued by B.E.C. On completion of the work the Electrical Contractor shall obtain certificates of inspection, approval, acceptance and compliance from all agencies and/ or



entities having jurisdiction over the work and shall deliver these certificates to the Commissioner in accordance with Section 01 77 00 CLOSEOUT PROCEDURES.

E. RESPONSIBILITY FOR CARE AND PROTECTION OF EQUIPMENT:

1. Any Contractor furnishing any equipment shall be responsible for the equipment until it has been finally inspected, tested and accepted, in accordance with the requirements of the Contract.
2. After delivery and before and after installation, such Contractor shall protect all equipment against theft, injury or damage from all causes. Such Contractor shall carefully store all equipment received for work, which is not immediately installed. If any apparatus has been subject to possible injury by water, it shall be thoroughly dried out and put through a special dielectric test as directed by the Commissioner, at the expense of such Contractor or replaced by such Contractor without additional cost to the City.

F. UNIFORMITY OF EQUIPMENT: Any two (2) or more pieces of equipment, apparatus or materials of the same kind, type or classification which are intended to be used for identical types of service, shall be made by the same manufacturer.

1.6 SUBMITTALS:

A. CONTRACTOR'S ELECTRICAL DRAWINGS AND SAMPLES FOR APPROVAL:

1. The Electrical Contractor shall submit to the Commissioner for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES, complete dimensional drawings of all equipment, wiring diagrams, motor test data, details of control, installation layouts showing all details and locations and including all schedules, and descriptions and supplementary data to comprise complete working drawings and instructions for the performance of the work. A description of the operation of the equipment and controls shall be included. A letter, in triplicate, shall accompany each submittal.
2. The Electrical Contractor shall submit in accordance with Section 01 33 00 SUBMITTAL PROCEDURES, duplicate samples of such materials and appliances as may be requested by the Commissioner for approval. These samples shall be properly tagged for identification and submitted for examination and test. After the samples are approved, one (1) sample will be returned to the Contractor and the other sample will be filed in the office of the Commissioner's representative for inspection use. After the Contract is completed, the second set of samples will be returned to the Contractor.

- B. TIMELINESS:** All material shall be submitted in accordance with the submittal schedule in sufficient time for the progress of construction. Failure to promptly submit acceptable samples and dimensional drawings of equipment will not be accepted as grounds for an extension of time. The Commissioner may decline to consider submittals unless all related items are submitted at the same time.
- C. CONTRACTOR'S STATEMENT WITH SUBMITTALS:** Contractor shall submit statement in accordance with Section 01 33 00, SUBMITTAL PROCEDURES.
- D. BULLETINS AND INSTRUCTIONS:** The Electrical Contractor shall furnish and deliver to the Commissioner in accordance with Section 01 78 39, CONTRACT RECORD DOCUMENTS and Section 01 77 00, CLOSEOUT PROCEDURES, after acceptance of the work, four (4) complete sets of instructions, technical bulletins and any other printed matter (diagrams, prints, or drawings) required to provide complete information for the proper operation, maintenance and repair of the equipment and the ordering of spare parts.



PART II – PRODUCTS (Not Used)

PART III – EXECUTION

3.1 ELECTRICAL INSTALLATION PROCEDURES:

This Sub-Section sets forth the General Installation Procedure that shall apply to all electrical work and electrical equipment appearing in the Contracts.

(Refer to Sub-Section 1.4 DEFINITIONS for terms used in this section)

- A. **INTENT OF CONTRACT DOCUMENTS:** The Drawings and Specifications are to be interpreted as a means of conveying the scope and intent of the work without giving every minor electrical detail. It is intended, nevertheless, that each Contractor shall provide whatever labor and materials are found necessary, within the scope of its Contract, for the successful operation of the installation. Specific details of individual installations are to be finally decided upon when the Contractor submits Working or Shop Drawings for approval to DDC. Whenever there are two (2) or more methods to complete project work within the Contract scope, the Commissioner reserves the right to choose that method which, in the Commissioner's opinion, will afford the most satisfactory performance, lasting qualities, and accessibility for repairs, even though this selection is the most costly.
- B. **SCHEMATIC PLANS – APPROXIMATE LOCATIONS:** Conduits and wiring are shown on the plans for diagrammatic purposes only. Therefore, conduit layouts may not necessarily give the actual physical route of the conduits. The Contractor who installs a conduit system will also be required, as part of the work, to furnish and install all hangers and pull-boxes, including any special pull-boxes found necessary to overcome interferences, and to facilitate the pulling of electrical cables. Similarly, the locations of equipment, appliances, outlets and other items shown on Contract Drawings are only approximate and are to be definitively established when equipment Shop Drawings are submitted and approved by DDC during construction.
- C. **SLEEVES:** required for conduits passing through walls or floors, shall be furnished and set by the Contractor installing the conduits. Sleeves in waterproofed floors shall be provided with flashing extending 12 inches in all directions from sleeve and secured to waterproofing. Flashing shall be turned down into space between pipe and sleeve and caulked watertight. Flashing shall be 20 oz. cold rolled copper. Sleeves shall be supplied with welded flanges similar to those supplied by the Plumbing Contractor and shall extend one (1) inch above finished floor.
- D. **COORDINATION:** Each Contractor shall keep in close touch with the construction progress and obtain the necessary information for the accurate placement of its work in ample time before project construction operations obstruct its work. Each Contractor is to consult all other Contract Drawings, as well as approved equipment Shop Drawings on file in the Resident Engineer's Field Office. This will aid in avoiding interferences, omissions and errors in the electrical installation.
- E. **RESTORATION:** If drilling or cutting is done on finished surfaces of equipment or the structure, any marring of the surface shall be repaired or replaced by the Contractor who caused the damage. Each Contractor shall be held responsible for corrective restoration due to its cutting or drilling, and for any damage to the project or its contents caused by the Contractor or the Contractor's workers. Any Contractor who pierces waterproofing because of the installation of their work shall, at their own expense, restore the waterproofing to the satisfaction of the Commissioner.
- F. **ELECTRICAL WORK AT SITE:** Any Contractor who is required to furnish equipment consisting of a number of related electrical devices or appliances, mounted in a single enclosure, or on a common base,



shall furnish this unit complete with internal wiring, connections, terminal boxes with copper connectors and/or lugs and ample electrical leads, ready for connection and operation. The cost of any wiring, re-wiring or other work required to be done on this unit in the field, shall be borne by the Contractor who furnished the unit, without additional cost to the City.

- G. **COOPERATION AMONG CONTRACTORS:** Whenever an electrically operated unit or system involves the combined work of several Contractors for its installation and successful operation, each Contractor shall exercise the utmost diligence in cooperating with others to produce a complete, harmonious installation.
- H. **WORK BY CONTRACTORS FURNISHING ELECTRICAL EQUIPMENT:** Any Contractor who furnishes an electrically operated or motorized unit of equipment shall install same and, as part of its Contract, perform the following work in connection therewith:
1. **FOUNDATIONS:** Unless otherwise specified or indicated, the Contractor furnishing electrically operated equipment shall also furnish and install approved foundations for same. Special foundations, if required, will be described in the detailed Specification and/or in the Drawings.
 - a. **MATERIAL -** All foundations, unless required otherwise, shall rest on a structural slab and shall be of poured concrete; of a mixture specified for reinforced concrete. Foundations shall present a neat, smooth appearance without voids, sharp corners or edges.
 - b. **DIMENSIONS:** Foundation dimensions, height above floor, methods of setting, aligning and anchoring of equipment shall be as recommended by the manufacturer of equipment and approved by the Commissioner. The minimum height of foundations above finished floor shall be four (4) inches and foundations shall extend at least six (6) inches at all sides beyond the base plates of equipment.
 2. At least one (1) inch of grout shall be applied under the equipment base plate after placement and alignment of the equipment.
 3. **ITEMS:** Anchor plates, bolts, sleeves, nuts and washers and other necessary items for proper installation of equipment shall be provided. The Contractor shall also furnish and set required templates to locate accurately the positions of the hold down bolts.
 4. **VIBRATION ISOLATION:** If specifically required in the detailed Specifications for a particular unit, vibration isolators shall be provided for rotating equipment.
 5. **SUPPORTS:** If any motorized equipment is required to be mounted overhead or off a wall, the Contractor supplying the unit shall furnish and install a suitable platform, bracket or shelf, whichever is appropriate or specified, and mount the equipment thereon. This support shall be constructed of Galvanized steel members, plates, etc., and the whole securely fastened to the structure or to anchors previously embedded in the wall or slab. In case of excessive vibration transmitted to structure, isolating pads or other devices shall be installed. The Contractor shall apply one (1) coat of approved Galvanized primer paint to the support and one (1) additional coat of approved paint in the field.
 6. **ASSOCIATED EQUIPMENT:** The Contractor who furnishes a motorized or electrically operated unit of equipment shall also furnish all associated motor starters, disconnect means, relays, control devices, lamps, or other devices, necessary for the successful functioning of the unit.
 7. **POINT OF DELIVERY:** Any item specified to be installed by the Contractor for Electrical Work and delivered to the site that cannot be hand carried (due to bulk, weight or timeliness) to the location of its installation is to be delivered and set in place, leveled and secured by the Contractor furnishing the equipment. Such delivery shall be to the location where it is to be installed by the Contractor for Electrical Work.
 8. **CONTROL AND INTERLOCK WIRING:**



- a. General Construction Work and Plumbing Work.
 - (1) All control wiring associated with doors and door hardware is to be furnished and installed, unless otherwise indicated, by the Contractor furnishing the doors. Power for the door operation and for its controls shall be furnished and installed by the Contractor for Electrical Work.
 - (2) All other control wiring associated with equipment furnished by either the Contractor for General Construction Work or the Contractor for Plumbing Work is to be furnished and installed by the Contractor for Electrical Work.
 - b. Contractor for Heating, Ventilating and Air Conditioning Work
 - (1) The furnishing and installing of all control devices and all control and interlock wiring for equipment furnished under the Heating, Ventilating and Air Conditioning Contract shall be by that Contractor, including any power required for any control device.
 - (2) The Contractor for Heating, Ventilating and Air Conditioning Work shall deliver to the Contractor for Electrical Work all starters and disconnect switches specified to be furnished under the Heating, Ventilating and Air Conditioning Contract. The Contractor for Electrical Work is to install the starters and disconnect switches, and furnish and install all power wiring and make connections between the starter, disconnect switch and motor or equipment being served. The motor or equipment is to be mounted by the Contractor furnishing the motor.
9. **INSTALLATION OF BURNER:** The Contractor who furnishes and installs the gas/oil-fired boiler/furnace shall also include as part of its Contract, the work of furnishing, installing and connecting all equipment, controls with necessary conduits and wiring, to a service point provided by the Contractor for Electrical Work. Unless detailed otherwise in the Specifications, the Contractor for Electrical Work shall furnish power from the power source to a junction box furnished and installed by the Contractor for the Electrical Work and located near the boiler/furnace control panel. The Contractor for Electrical Work shall also furnish and install an empty conduit and a junction box to be located at a remote location (outside of the boiler/furnace room) for an emergency shut-off switch. The shut-off switch and all other conduit and wire shall be furnished and installed by the Contractor furnishing the boiler/furnace.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB SECTION 3.2

3.2

ELECTRICAL CONDUIT SYSTEM INCLUDING BOXES (PULL, JUNCTION AND OUTLET):

This Sub-Section sets forth the requirements applying to any Contract requiring the installation of electrical conduits, boxes or fittings. Rigid steel conduit shall be used through out, unless otherwise directed by the Commissioner. Where the word 'conduit', without a modifier such as, rigid steel, EMT, etc., is specified to be used, it shall be interpreted to mean, rigid steel, heavy wall, threaded conduit.

(Refer to Sub-Section 1.4 DEFINITIONS for terms used in this section)

A. INSTALLATIONS AND APPLICATIONS:

1. Unless otherwise specified or indicated on the Contract Drawings, conduit runs shall be installed concealed in finished spaces.
2. **CONDUIT SIZES:** The sizes of conduit shall be as indicated on the Contract Drawings. Wherever conduit sizes are not indicated, the conduit shall meet the requirements of the New York City Electrical Code to accommodate the conductors to be installed therein.



3. Conduits shall be reamed smooth after cutting. No running threads will be permitted. Universal type couplings shall be used where required. Conduit joints shall be screwed up to butt. Empty conduits after installation shall have all open ends temporarily plugged to prevent the entrance of water or other foreign matter.
4. Conduits being installed in concrete or masonry shall be securely held in place by the Contractor installing them during pouring and construction operations. A group of conduits terminating together shall be held in place by a template.
5. **UNDERGROUND STEEL CONDUITS:** Unless otherwise specified, all underground steel conduits in contact with earth shall be encased by the Contractor who installs them, in a covering of not less than two (2) inches of an approved concrete mixture. Concrete mix shall be one (1) part cement to four and one-half (4 ½) parts of fine and coarse aggregate.
6. **EXCAVATION RESTORATION PERMITS:** The Contractor installing underground conduits, duct banks or manholes shall perform as part of its contract the work of cutting pavement, excavation shoring, keeping trenches or holes pumped dry, backfilling, restoration of surfaces to original condition and removal of excess earth and rubbish from premises. During the work, the Contractor shall provide adequate crossovers, protective barriers, lamps, flags, etc., to safeguard traffic and the public. When the work is in a public highway or street, the Contractor shall secure and pay for all necessary permits and inspection fees and pay the cost of repaving.
7. **EXPOSED CONDUIT SUPPORTS:** Exposed conduit shall be supported by Galvanized hangers with necessary inserts, beam clamps of approved design or attached to walls or ceilings by expansion bolts. Exposed conduits shall be supported or fastened at intervals not more than five (5) feet.
8. Exposed conduit shall be installed parallel or at right angles to ceiling, walls and partitions. Where direction changes of exposed conduit cannot be made with neat bends, such as required around beams or columns, conduit type fitting shall be used.
9. The conduit shall be installed with an approved expansion joint:
 - a. Wherever the conduit crosses a building expansion joint (the Contractor responsible for furnishing and installing the conduit will be held responsible for determining where the building expansion joints are located):
 - b. Every 200 feet, when in straight runs of 200 feet or longer.
10. Conduit may only enter and leave a floating slab in the vertical direction, and then only in an approved manner. Horizontal entries into floating slabs are not permitted.
11. Conduit installed in pipe shafts shall be properly supported to carry the total weight of the raceway system complete with cable. In addition at least one (1) horizontal brace per 10 ft. section shall be provided to assure stability of the raceway system.
12. **BUSHINGS AND LOCKNUTS:** Approved bushings and locknuts shall be used wherever conduits enter outlet boxes, switch boxes, pull boxes, panel board cabinets, etc.
13. **CONDUIT BENDS:** shall be made without kinking conduit or appreciably reducing the internal diameter. All bends in conduit of two (2) inch in diameter or larger shall be made with an hydraulic or power pipe bender. The radius of the inner edge of any bend shall not be less than six (6) times the internal diameter of the conduit where rubber covered conductors are to be installed, and not less than 10 times the internal diameter of the conduit where lead covered conductors are to be used. Long gradual sweeps will be required, rather than sharp bends, when changes of direction are necessary.



14. EMPTY CONDUITS

- a. TESTS: All conduits and ducts required to be installed and left empty shall be tested for clear bore and correct installation by the Contractor who installed them using a ball mandrel and a brush and snake before the installation will be accepted. The ball shall be turned to approximately 85% of the internal diameter of the raceway to be tested. Two (2) short wire brushes shall be included in the mandrel assembly. Snaking of conduits, ducts, etc., shall be performed by the Contractor in the presence of the Resident Engineer. Any conduits or ducts which reject the mandrel shall be cleared at once with the Contractor bearing all costs, such as chopping concrete, to replace the defective conduit and restore the surface to its original condition.
- b. TAGS: Numbers or letters shall be assigned to the various conduit runs, and as they test clear they shall be identified by a fiber tag not less than 1-¼ inch width, attached by means of a nylon cord. All conduit terminations in panel, splice or pull boxes as well as those out of the floor or ceiling shall be tagged.
- c. TEST RECORDS: As the conduit runs clear, a record shall be kept under the heading of "Empty Conduit Tested, Left Clear, Tagged and Capped" showing conduit designation, diameter, location, date tested and by whom. When complete, this record shall be signed by the Resident Engineer and submitted in triplicate for approval. This record shall be entered on the Contract Record Drawings under Section 01 78 39, CONTRACT RECORD DOCUMENTS.
- d. CAPPING: All empty conduit and duct openings, after test, shall be capped or plugged by the Contractor who installed them as directed.
- e. DRAG LINES: A drag line shall be left in all empty conduit.

B. BOXES:

1. The Electrical Contractor shall furnish and erect all pull boxes indicated on the plans or where required. Sides, top and bottom of pull boxes shall be Galvanized coated and shall be built of No. 12 USSG steel reinforced at corners by substantial angle irons and riveted or welded to plates. Bottom or side of pull boxes shall be removable and held in place by corrosion resistant machine screws. Pull boxes in damp locations shall have threaded hubs and gaskets and be NEMA 4X. All pull boxes shall be suspended from ceiling or walls in the most substantial manner.
2. In centering outlets, the Electrical Contractor is cautioned to allow for overhead pipes, ducts and other obstructions, and for variations in arrangement and thickness of fireproofing, soundproofing and plastering. Precaution should be exercised regarding the location of window and door trims, paneling, etc. Mistakes resulting from failure to exercise precaution must be corrected by the Contractor at no additional cost to the City. Outlets in hung ceilings shall be supported from the black iron or structure.
3. The exact location of all outlets in finished rooms shall be as directed. When the interior finish has been applied, the Electrical Contractor shall make any necessary adjustment of its work to properly center the outlets. All outlet boxes for local switches near doors shall be located at the strike side of doors as finally hung, whether so indicated on the drawings or not.
4. Exposed wall outlet boxes shall be erected neatly and tight against the walls and securely anchored to same.
5. All wall outlets of each type shall be set accurately at the same level on each floor, except where otherwise specified or directed. Where special conditions occur, outlets shall be located as directed.



6. MOUNTING HEIGHTS: The following heights are standard heights and are subject to correction due to coordination with Contract Drawings. All such changes must be approved by the Resident Engineer. Heights given are from finished floor to center line of outlet or device on wall or partition, unless otherwise indicated.
- | | |
|--|------------------------------|
| a. General Convenience Outlets
(mount vertical) | 1'-6" |
| b. Clock Outlets | 8'-6" or 1'-6" below ceiling |
| c. Wall Lighting Switches | 4'-0" |
| d. Motor Controllers | 5'-0" |
| e. Motor Push-button | 4'-2" |
| f. Telephone Outlets | As Directed |
| g. Fire Alarm Bells | 8'-6" or 1'-6" below ceiling |
| h. Fire Alarm Stations | 4'-0" |
| i. Intercom Outlet | 1'-6" |
| j. Cooking and Refrigerator Unit | As Directed |
7. Outlet boxes shall be of approved design and construction; of form and dimensions suited and adapted to its specific location; the kind of fixture to be used and the number and arrangements of conduits, etc., connecting therewith. All ferrous outlet boxes shall meet the requirements for zinc coating as specified under Electrical Conduit Systems.
8. There shall be knockouts opened only for the insertion of conduit. Any outlet boxes with more openings than are necessary for conduit insertion shall be sealed by the Electrical Contractor without additional charge.
9. All outlet boxes and junction boxes for exposed work shall be galvanized cast iron or cast aluminum with threaded openings. Outlet boxes for exposed inside work in damp locations shall be galvanized cast iron or cast aluminum with threaded hubs and neoprene gaskets.
10. Junction boxes shall not be less than 4 11/16" square and shall be equipped with zinc coated plates. Where plates are exposed they shall be finished to match the room decor.
11. FIXTURE SUPPORTS: Outlet boxes supporting lighting fixtures shall be equipped with fixture studs held by approved galvanized stove bolts or integral with the box. Cast iron or malleable boxes shall have four (4) tapped holes for mounting required cover or fixtures.
12. Outlet boxes exposed to the weather or indicated W.P., shall be cast iron or cast aluminum and the covers made watertight with neoprene gaskets. The boxes shall have external lugs for mounting. Drilling of the body of the fitting for mounting will not be permitted. The cover screws shall be appropriate in size, non-corrodible and not less than four (4) in number for each box opening.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.3

3.3

ELECTRICAL WIRING DEVICES:

- A. WALL SWITCHES shall be of the best specification grade, quiet type, and shall have a rating of 20 Amperes at 277 volts, as manufactured by Bryant, Hubbell or approved equal. The mechanism shall be equipped with arc snuffers. They shall be of the tumbler type, single pole. Switches of the 3-way type shall have a similar rating.
- B. RECEPTACLES:



1. **CONVENIENCE OUTLETS:** shall be of the best specification grade, duplex, two-pole, 3-wire, 20 Amperes at 125 volts. It shall have a grounding pole that shall be grounded to the conduit system. Receptacles shall be capable of both back and side wiring and shall have only one (1) grounding screw. Receptacles shall be Hubbell Cat. #5262 or approved equal.
 2. **HEAVY DUTY RECEPTACLE OUTLETS:** shall have the Ampere rating and the number of poles specified on the Contract Drawings and shall be Hubbell, Russell-Stoll, Bryant, AH & H or approved equal. Each outlet shall have a grounding pole, which shall be grounded to the conduit system.
 3. **FLOOR RECEPTACLES:** shall be Russell & Stoll #3040 or approved equal, to fit into floor box previously specified.
 4. **NAMEPLATES:** are required for all receptacles other than 120V.
- C. **CLOCK HANGERS:** Clock outlets for surface type clocks shall be equipped with a supporting hook and recessed faceplate to conceal the electrical cord.
- D. **WATERTIGHT DEVICES:** For installations exposed to weather or in damp locations, the devices shall be in a gasketed, cast iron enclosure.
- E. **PLATES:**
1. Every convenience outlet and switch outlet shall be covered by means of a stainless steel No. 302 - 0.4" antimagnetic plate with an approved finish, unless provided otherwise in the detailed Specifications.
 2. Where two (2) or three (3) switches are grouped together, a single faceplate shall be used. Where more than three (3) switches are located at one (1) point, the faceplates may be made up in multiple units.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4

3.4

ELECTRICAL CONDUCTORS AND TERMINATIONS:

- A. **CONDUCTORS FOR LIGHT AND POWER -** All wire and cable shall be of annealed copper of 98% conductivity. Aluminum wire or cable will not be permitted. The insulation shall be flame retardant, moisture and heat resistant, thermoplastic, type THW or THWN rated for 600 volts at 75 degrees C. for both wet and dry locations. Wires No. 8 or larger shall be stranded. Wires and cables shall also be subject to the requirements of the NYCEC. Cables for incoming service or wire in conduits contiguous with the earth or in concrete or other damp or wet locations shall be synthetic rubber insulated with neoprene jacket, heat and moisture resistant and shall be equal to UL Type USE and rated for 600 volts at 75 degrees C. for both wet and dry locations.
- B. **FIXTURE WIRE:** Lighting fixtures shall be wired with No. 14 gauge wire designated as AWM and rated at 105 degrees C.
- C. **OTHER TYPES:** Cables and wires for interior communication systems are described in applicable detailed Specifications.
- D. **MINIMUM SIZE:** Conductors smaller than No. 12 AWG shall not be used for light or power.
- E. **COLOR CODE:** Wires shall have a phase color code, and multiple conductor cables shall be color coded.
- F. **CABLE DATA:** The Electrical Contractor shall submit for approval the following information for each size and type of cable to be furnished.
1. **Manufacture of Cable - Location of Plant.**
 2. **Minimum insulation resistance at standard test temperature.**
 3. **Days required for delivery to site of work after order to proceed with manufacture.**



G. ORIGINAL REELS: Cable and wire shall be delivered to the site of the work on original sealed factory reels.

H. WIRE INSTALLATION:

1. INSTALL WIRES AFTER PLASTERING - Feeder and branch circuits wiring shall not be installed in conduit before the rough plastering work is completed. No conductors shall be pulled into floor conduits before floor is poured.
2. CONDUIT SECURED IN PLACE - No conductor shall be pulled into any conduit run before all joints are made up tightly and the entire run rigidly secured in place.
3. WIRE ENDS - All wires shall be left with sufficiently long ends for proper connection and stowing.
4. PULLING COMPOUNDS - When required to ease the pulling-in of wires into conduit, only approved compounds as recommended by cable manufacturers shall be used.
5. PRESSURE CONNECTORS - for wires shall be of the cast copper or forged copper pressure plate type. Connectors shall be O.Z., Burndy, National Electric Products or approved equal.
6. Splices and feeder taps in the gutters of panel boxes shall be made by means of pressure plate type connectors encased in composition covers as manufactured by O.Z., Burndy, National Electric Products or approved equal.
7. Splices in branch wiring for sound systems and fire systems, shall be first made mechanically secure, then soldered and taped.
8. In lieu of soldered splices (except for sound and Fire Systems, which must have soldered splices) the following alternates are acceptable for operating temperatures up to 105 degrees C., for fluorescent fixtures and for the splicing of branch circuit wiring up to No. 8 AWG wire:
 - a. Mechanical splices made with mechanical connectors as manufactured by the Minnesota Manufacturing Company "Scotchlock" or approved equal. Mechanical connectors requiring a special tool (pressure connectors, insulators and locking rings) by Buchanan or approved equal. The tool used for connector application shall be as approved by the connector manufacturer.
 - b. For wire and cable No. 6 AWG and larger for branch circuit wiring the seamless tubular connector will only be accepted. Application of this connector shall be with a tool recommended by the connector manufacturer.
9. TAGS: All feeders and risers shall be tagged at both ends, and in all pull and junction boxes and gutter spaces through which they pass. Such tags shall be of fiber and have the feeder designation and size stamped thereon.
10. BRANCH CIRCUIT WIRING:
 - a. The Contractor installing branch circuit wiring shall test the work for correct connections and leave all loop splices in the fixture outlet boxes properly spliced and taped. The Contractor shall provide wire ends long enough for convenient connection to device.
 - b. NEUTRALS: No common neutrals shall be used except for lighting branch circuits. Each neutral wire shall be terminated separately on a neutral busbar in the panelboard. No common neutrals will be permitted for convenience receptacle branch circuits.

I. TERMINATIONS

1. LUGS: All lugs for all devices and all cable terminations shall be copper. AL/CU rated lugs will not be permitted. The only exception to this requirement is when the particular device is not manufactured with copper lugs by any manufacturer. Lugs for No. 6 AWG cable and larger shall be



cast copper or forged copper pressure plate type. Lugs for 1/0 and larger shall be fastened with two (2) bolts.

2. All lugs shall be of the proper size to accept the cable connected to them. Any Contractor furnishing a device containing lugs is to coordinate with the Electrical Work Contract Documents to insure that the device terminations are adequate for the wire or cable (whose size may be larger than expected due to voltage drop considerations) connected to the device. This requirement applies to both the Electrical Contractor whose branch circuit protector must have lugs of the proper size, as well as to the Contractor who furnishes the device who may have to increase the size of that particular device.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB SECTION 3.5

3.5 CIRCUIT PROTECTIVE DEVICES:

This Section sets forth the circuit protective devices such as circuit breakers and safety switches, used in connection with Motor Control Equipment, Distribution Centers, Panelboards and Service Entrance.

A. CIRCUIT BREAKERS:

1. **CIRCUIT BREAKERS:** shall be operable in any position and shall be of the quick-make, quick-break type on manual operation. The handle shall be trip free, preventing contacts from being held in closed position against abnormal overloads or short circuits. Positive visual indication of automatic tripped position of breaker shall be provided, in addition to the "On" and "Off" indication. All circuit breakers shall be of the bolted type.
2. **TRIP RATING:** Circuit breakers shall be provided with the required number of trip elements, calibrated at 40 degrees C., ambient temperature, in accordance with wire sizes or motor currents as shown on Contract Drawings or indicated in the Specifications.
3. **POLE BARRIER:** Multipole pole breakers shall be designed to break all poles simultaneously. They shall be provided with barriers between poles and arc suppressing devices.
4. **ELEMENTS:** Multipole circuit breakers shall have frames of not less than a 100 Ampere rating. Multipole circuit breakers for 480 volts AC operation shall have a NEMA interrupting rating of 18,000 Amperes, unless a higher rating is specified in the Specific Requirements or indicated on the Contract Drawings.
5. For circuit breakers with frame size up to and including 225 Amperes, the breakers may be provided with non-interchangeable trip elements. For frame ratings above 225 Amperes, the breakers shall be provided with interchangeable trip elements, which can be replaced readily.
6. Single pole circuit breakers for branch circuits shall have a frame size of no less than 100 Amperes, and shall be rated at 125 volt A.C. with a NEMA interrupting rating of 10,000 Amperes, unless a higher rating is specified in the Specifications or indicated on the Contract Drawings.
7. **INVERSE TIME ACTION:** The circuit breakers shall be dual element type, one (1) element with time limit characteristics, so that tripping will be prevented on momentary overloads, but will occur before dangerous values are reached and the other with instantaneous trip action. Inverse time delay action shall be effective between a minimum tripping point of 125% of rating of breaker and an instantaneous tripping point between 600% and 700% of rated current.
8. **CONSTANCY OF CALIBRATION:** The tripping elements shall insure constant calibration and be capable of withstanding excessive short circuit conditions without injury.
9. **CONTACTS:** shall be non-welding under operating conditions and of the silver to silver type.



10. TEMPERATURE RISE: Current carrying parts, except thermal elements, shall not rise in temperature in excess of 30 degrees C. while carrying rated current at rated frequency.
11. NUMBERING: Each circuit breaker shall be distinctly numbered when installed in a group with other breakers. The calibration of trip element shall be indicated on each breaker.

B. SAFETY SWITCHES:

NEMA TYPE HD: When safety switches are permitted to be used for service entrance, motor disconnecting means or to control other types of electrical equipment, they shall be of the type HD of a rating not less than 30 Amperes. Enclosures shall be provided with means for locking. For ratings above 60 Amperes terminals shall have double studs.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.6

3.6

DISTRIBUTION CENTERS:

This Section sets forth the construction and installation procedure for Switchboards, Panelboards and Cabinets.

- A. PANELBOARDS-GENERAL TYPE: The panelboards shall be of the automatic circuit breaker type with individual breakers for each circuit, removable without disturbing the other units. Circuit breakers shall be in accordance with the requirements outlined under "Circuit Protective Devices."
- B. NUMBER AND RATING OF CIRCUIT BREAKERS: The Contract Drawings show a layout of each panel, giving the number, frame, size and trip setting of circuit breakers and number of branch circuits and spare breakers. Each branch circuit shall be distinctly numbered.
- C. BUS-BAR CONSTRUCTION AND SUPPORT: Panel Boards shall be of the dead front type and shall have bus bars and branch circuits designed to suit the system and voltage. Current carrying parts, exclusive of circuit breakers shall be copper and based on a maximum density of 1,000 Amperes per square inch. Bus bars for the main switchboard shall be designed for the frame rating of the Service Breaker. Bus bars shall run up the center of the panel, unless otherwise indicated, and shall have connected thereto the various branch circuits. Unless otherwise specified, bus bars for each panelboard shall be equipped with main lugs only and capacity as required on Contract Drawings. Where main protection is required, automatic circuit breakers shall be used. A neutral bus of at least the same capacity as a live bus bar shall be provided for the connection of all neutral conductors. Each terminal shall be identified. All current carrying parts, exclusive of circuit breakers, shall be of copper with a minimum number of joints. The bus bar structure shall be a self supporting unit, firmly fastened to a 1/2 inch plastic board, extending the full length and width of assembly which shall serve to insulate the bus structure from the back of panel box. Other methods affording equally effective bus structure support and insulation will be given consideration. An insulating barrier shall separate neutral bus from other parts of panel.
- D. CIRCUIT BREAKER ASSEMBLY: The entire circuit breaker and bus bar assembly shall be mounted on an adjustable metal base or pan and secured to the back of panel box. The panel shall have edges flanged for rigidity.
- E. PANEL MOUNTING: The panel shall be centered in the panel box to line up with door openings and set level and plumb so that no live parts are exposed with the door open.
- F. PANEL CABINET:
 1. PANEL CABINET INSTALLATION: When installed surface mounted in panel closets they shall be mounted on Kindorf channel.



2. Where cabinets cannot be set entirely flush due to shallow walls or partitions or where cabinet is extra deep, the protruding sides of cabinet shall be trimmed with a metal or hardwood return molding of approved design and fastened to cabinet so as to conceal the intersection between the wall and cabinet.
- G. **NAMEPLATES:** Nameplates where required, shall be made of engraved Lamicoide sheet, or approved equal. Letters and numbers shall be engraved white on a black background (except for Firehouse projects which shall have white letters on a red background). The Electrical Contractor shall submit an engraved sample for approval as to design and style of lettering before proceeding with the manufacture of the nameplate. Nameplates shall be of suitable size and shall also be provided at the top of the switchboard or section thereof and on the trim at the top of all lighting and power panels. Similar nameplates shall also be provided for each distribution circuit breaker giving the breaker number, the number of the feeder, and the name of the equipment fed.
- H. **SHOP DRAWINGS:** showing all details of boxes, panels, etc., shall be submitted for approval.
- I. **DIRECTORIES:** A directory shall be fastened with brass screws and consist of a noncorrosive metal frame with dimensions not less than five (5) inches x eight (8) inches and a transparent window of Plasticile, Plexiglass, Lucite or approved equal that is not less than 1/16 inch thick over cardboard or heavy paper. The directory shall be typewritten and show the number of each circuit, the name of circuit and lighting or equipment supplied. The size of riser feeder shall be as indicated on directory. The dimensions of directory shall be submitted for approval for each size of panel.
- J. **CONSTRUCTION**
1. **FINISH:** Panel boxes, doors and trim for installation in dry locations, shall be zinc coated after fabrication by the hot-dip galvanizing or electroplate process on inside and outside surfaces. In damp locations, panelboards shall be enclosed and gasketed NEMA 3R type. Panelboards located outdoors or exposed to the weather shall be NEMA 3X Type.
 2. **PAINTING:** Panel boxes, doors and trim shall receive a coat of approved priming paint and a second coat of approved paint in the field after installation. Paint shall be applied to the inside and outside of boxes and on both sides of trim. Panel trims and doors shall receive a third or finishing coat on the outside after installation. Approval as to texture and color must be obtained before the final coat is applied. All of the aforementioned painting is to be done by the Contractor who furnishes the boxes and trim. Where panel trims or boxes are installed on walls which are to be painted, the previously mentioned third or finishing coat of paint shall be included in the work of the Contractor who has the Contract for general interior painting.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.7

3.7

MOTORS:

This Section sets forth the general design, construction and performance requirements, which shall apply to all motors furnished in any of the Contracts.

- A. **MOTOR DESIGN:** All motors shall be designed to comply with the New York State Energy Conservation and Construction Code currently in effect and the New York City Energy Conservation Code. In the event of any conflict or inconsistency between such codes the New York City Energy Conservation Code shall prevail. Motors shall have standard NEMA frames and shall have nameplate ratings adequate to meet the specified conditions of operation. Motor performance under variable conditions of voltage and frequency shall be within the limits set in NEMA standards, unless modified in the Specifications. Motors shall be expressly designed for the hazard duty load, voltage and frequency as specified in the Contract.



All motor windings shall be copper. All motors intended to operate on a 208 volt system shall be designed and rated for 200 volts.

- B. **STANDARDS OF COMPARISON:** In the absence of specific motor specifications, in general, the best standard products of the leading motor manufacturers shall be considered as a standard for comparison. The requirements of the NEMA standards for motors and generators shall be deemed to contain the minimum requirements of performance and design.
- C. **OBJECTIONABLE NOISES:** Objectionable noises will not be tolerated and exceptionally quiet motors may be required for certain specified locations. Noise control tests as per the New York City Construction Codes may be performed as directed by the Commissioner. Such motors shall bear a nameplate lettered "Quiet Motor." Springs and slip rings shall be of approved non-ferrous material.
- D. **BEARINGS:**
1. Bearings, unless specified otherwise, shall be of the ball or roller type. Motors one (1) horsepower and larger that are equipped with ball roller bearings shall also have lubrication of the pressure-relief greasing type. Each Contractor who furnishes four (4) or more such motors shall also furnish, as part of its Contract, a pressure grease gun of rugged design, of approximately 10 ounce capacity, complete with necessary adapters. The Contractor shall also provide 10 pounds of approved gun grease.
 2. For any particular unit where sleeve bearings are deemed desirable, permission for their use may be granted by the Commissioner. Motors one (1) horsepower and larger that are equipped with sleeve type bearings shall in addition to having protected accessible fittings for oiling be provided with visible means for determining normal oil level. Lubrication shall be positive, automatic and continuous.
- E. **MOTOR TERMINALS AND BOXES:** Each motor shall be furnished with flexible leads of sufficient length to extend for a distance of not less than three (3) inches beyond the face of the conduit terminal box. This box shall be furnished of ample size to make and house motor connections. These requirements shall be met irrespective of any other standards or practices. Size of cable terminals and conduit terminal box holes shall be subject to approval. For motors five (5) horsepower or larger, each terminal shall come with two (2) cast or forged copper pressure type connectors with bolts, nuts and washers. For motors of smaller ratings, connectors of other acceptable types may be furnished. For installations exposed to the weather or moist locations, terminal boxes shall be of cast iron with threaded hubs and gasketed covers. Cover screws shall be of non-corrosive material.
- F. **MOTOR TEMPERATURE RISES:** The motor nameplate temperature rises for the various types of motor enclosures shall be as listed below:
- | | |
|---|---------------|
| 1. Open Frame | 40 degrees C. |
| 2. Totally enclosed and enclosed fan cooled | 55 degrees C. |
| 3. Explosion proof and submersible | 55 degrees C. |
| 4. Partially enclosed and drip proof | 40 degrees C. |
- The temperature of the various parts of a motor shall meet the requirements of NEMA standards for the size and type of the motors. Tests for heating shall be made by loading the motor to its rated horsepower and keeping it so loaded for the rated time interval or until the temperature becomes constant.
- G. **SPECIAL CODE INSTALLATIONS:** Electrical installations covered by special publications of NBFU and by special City rulings and regulations shall comply in design and safety features with such applicable codes, regulations and rulings, and shall be furnished and installed complete with all accessories and safety devices as therein specified.



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- H. MOTORS ON LIGHTING PANELS: The largest A.C. motor permitted on branch circuits of lighting panels shall not exceed 1/4 horsepower.
- I. MOTORS RATED: ½ horsepower and larger shall be polyphase.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.8

3.8 MOTOR CONTROL EQUIPMENT:

This Section sets forth the requirements for motor controllers and associated devices. Such requirements are applicable to all Contracts under which motor control equipment is furnished or installed.

- A. MANUFACTURER: All control equipment furnished under the Contract shall be the product of a single manufacturer. Exceptions to this rule may be granted in the case of controllers for fractional horsepower motors driving special equipment, the various units of which have been engineered to obtain specific performance.
- B. CONTROL ITEMS REQUIRED: The Contractor who furnishes a motor shall also furnish therewith complete disconnecting, starting and control equipment as required by the detailed Specifications, the various code authorities and for the successful operation of the driven equipment. These items include circuit breaker, magnetic starter with overload protection and low voltage release or protection, push button stations, pilot lights and alarms, float, pressure, temperature and limit switches, load transfer switches, devices for manual operation and speed controllers, etc. The Contractor shall furnish as many of these items as are required for the successful operation of the driven unit.
 - 1. Where a motor is to be located out of sight of the controller, the Contractor who furnishes the motor shall furnish an approved disconnecting means to be mounted near motor.
- C. TYPES OF STARTERS:
 - 1. SQUIRREL CAGE: A.C. motors of the squirrel cage type, rated from one (1) to 30 horsepower, shall have magnetic across the line starters; motors rated above 30 horsepower shall be furnished with reduced voltage (autotransformer type) starter or part winding start with time delay to reduce inrush current. Size of starters shall be based on 200V. operation.
 - 2. SLIP RING: A.C. Motors of the slip-ring type shall be furnished with primary across the line starters interlocked with secondary starting and regulating equipment. The interlocking feature shall prevent starting of the motor when the secondary controller is off the initial starting point.
 - 3. MAGNETIC: For fractional horsepower motors, magnetic type starters are not required unless the particular method of controlling the driven equipment makes them necessary. Where individual single phase fractional horsepower motors or the sum of fractional horsepower motors controlled by an automatic device are ½ horsepower or more, magnetic starters and circuit breakers shall be used. Single phase A.C. motors smaller than ½ horsepower or three-phase A.C. motors smaller than one (1) horsepower where manual control is specified may be furnished with starters of toggle switch or push button type with inbuilt thermal protection. No additional disconnecting means is required to be furnished with this type of starter. This type of starter may also be used in series with automatic control devices such as thermostats, float and pressure switches, provided the individual motor or the sum of fractional horsepower motors is less than ½ horsepower. Means for manual operation shall be provided.
- D. DISCONNECTING BREAKER: All motor starters, unless otherwise specified, shall be provided with a disconnecting means in the form of a circuit breaker of the type specified under Sub-Section 3.5 CIRCUIT



PROTECTIVE DEVICES of the General Conditions. This disconnecting means shall be contained in the same housing with the starter and shall be operable from outside. Means shall be provided for locking the handle of the circuit breaker in the "OFF" position if it is desired to take the equipment out of service and prevent unauthorized starting.

- E. CONTROL CABINET: DRY LOCATIONS - All starters shall be furnished with general purpose, NEMA Type 1, sheet metal enclosures with hinged covers and baked enamel finish.
- F. CONTROL CABINET - WATERTIGHT: In wet locations, cast iron watertight enclosures with threaded hubs, galvanized and gasketed hinged covers shall be provided.
- G.
 - 1. PANELS: Motor control devices and appliances shall be mounted on approved insulating slabs with all wiring and connections made on the back of the slabs.
 - 2. WIRING AND TERMINALS: Wiring connections for currents of 100 Amperes or less may be made with copper wire or cable with special flameproof insulating coverings. Such wires shall be installed in a neat workmanlike manner, flat against the slab, and held in place by clips. Connections shall be made with pressure connectors for No. 8 AWG and larger wires, and with grommets for small stranded wires. Except for incoming and outgoing main leads, all connections shall terminate on approved connector blocks, which may be installed on the face of the slab. For small, across the line starters, the above requirements may be modified if satisfactory connections are provided.
 - 3. COPPER BUS: For currents exceeding 100 Amperes, copper bus shall be used in place of wires. The bus shall be constructed of copper rods, tubing or flat strap, bent and shaped properly and securely attached to the slab in a neat and workmanlike manner. The cross section of copper shall provide sufficient areas to keep current density at not more than 1,000 Amperes per square inch.
- H. COOPERATION: The Contractors who furnish electrically operated equipment shall give to the Electrical Contractor full information relative to sizes and locations of apparatus furnished by them which require electrical connections.

Equipment being installed by the Electrical Contractor shall be delivered to the Electrical Contractor by other Contractors in proper time and sequence so that the Electrical Contractor shall be able to meet its Project Schedule.

- I. SPARE PARTS:
 - 1. FURNISH: Each Contractor shall furnish the following spare parts pertaining to equipment furnished by each Contractor.
 - One (1) set of contact fingers and springs and thermal elements for each three (3) (or fraction) of each size of magnetic contactor starter.
 - One (1) holding coil for each three (3) (or fraction) of each size of magnetic contactor starter.
 - 2. WRAPPER MARKING: All parts shall be delivered to the Resident Engineer neatly wrapped and boxed and plainly tagged and marked for identification and reordering.

3.9

SCHEDULE OF ELECTRICAL EQUIPMENT:

Schedule D, which is set forth in the Addendum, lists requirements for electrical motor equipment that may be included in one or more of the Specifications for the separate contracts for the Project. SCHEDULE D delineates the responsibilities of each separate contractor for electrical motor control equipment. In the event of any conflict between the Specifications and SCHEDULE D, SCHEDULE D shall take precedence; provided, however, in the event of an omission from SCHEDULE D (i.e., SCHEDULE D omits either a reference to or information concerning electrical motor equipment which is set forth in the Specifications), such omission from SCHEDULE D shall have no effect and the



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Contractor's obligation with respect to the electrical motor control equipment, as set forth in the Specifications, shall remain in full force and effect.

END OF SECTION 01 35 06

GENERAL ELECTRICAL REQUIREMENTS
01 35 06 - 18



SECTION 01 35 26
SAFETY REQUIREMENTS PROCEDURES

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract]
- B. Each Contractor shall comply with the requirements of "The City of New York Department of Design and Construction Safety Requirements". This document is included in the Information for Bidders.

1.2 SUMMARY:

- A. This Section includes administrative and general procedural requirements for Safety and Health Requirements, including:
 - 1. Definitions
 - 2. Required Safety Meeting
 - 3. Compliance with Regulations
 - 4. Submittals
 - 5. Personnel Protective Equipment
 - 6. Hazardous Materials
 - 7. Emergency Suspension of Work
 - 8. Protection of Personnel
 - 9. Environmental Protection

1.3 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.4 REQUIRED SAFETY MEETINGS:

- A. Prior to commencing construction, the Resident Engineer will schedule and hold a preconstruction kick-off meeting either at DDC's main office or at the Project site with representatives of each Contractor, including the principal on-site project representative and one or more safety representatives, Commissioner's designated representatives and other concerned parties for the purpose of reviewing the Contract Safety requirements. The Contractor's safety requirements shall be reviewed, and implementation of safety provisions pertinent to the Work shall be discussed.
- B. The GC Contractor is responsible to conduct weekly documented jobsite safety meetings, given to all jobsite personnel, including all Contractors and their subcontractors on the project, with the purpose of discussing safety topics and job specific requirements at the DDC worksite.



1.5 COMPLIANCE WITH REGULATIONS:

- A. The Work, including contact with or handling of hazardous materials, disturbance or dismantling of structures containing hazardous materials, and disposal of hazardous materials, shall comply with the applicable requirement for CFR Parts 1910 and 1926, and 40 CFR, Parts 61, 261, 761 and 763.
- B. Work involving disturbance or dismantling of asbestos or asbestos containing materials, demolition of structures containing asbestos and removal of asbestos, shall comply with 40 CFR Part 61, Subparts A and M, and 40 CFR Part 763, as applicable.
- C. Work shall additionally comply with all applicable federal, state and local safety and health regulations.
- D. In case of a conflict between applicable regulations, the more stringent requirements shall apply.
- E. All workers working on the DDC project site are required by NYC Local Law 41 to complete the OSHA 10 –hour training course.

1.6 SUBMITTALS:

- A. Each Contractor shall submit, to the Resident Engineer, copies of the Safety Program, Site Safety Plan and other required documentation in accordance with the "New York City Department of Design and Construction Safety Requirements."
- B. Permits: If hazardous materials are disposed of off-site submit copies of shipping manifests and permits from applicable federal, state or local authorities and disposal facilities, and submit certificates that the material has been disposed of in accordance with regulations to the Resident Engineer.
- C. Accident Reporting: Submit a copy of each accident report to the Resident Engineer in accordance with the "New York City Department of Design and Construction Safety Requirements."
- D. All Asbestos and Lead project regulatory notifications are to be submitted to DDC's Bureau of Environmental and Geotechnical Services (BEGS) through the Resident Engineer.
- E. Request for Subcontractor Approval: Any subcontractor performing environmental work shall submit required documentation for approval to perform such work as required by DDC's BEGS.

PART II – PRODUCTS

2.1 PERSONNEL PROTECTIVE EQUIPMENT:

- A. Special facilities, devices, equipment and similar items used by each Contractor in execution of the Work shall comply with 29 CFR Part 1910, subpart I, Part 1926, subpart E and other applicable regulations.

2.2 HAZARDOUS MATERIALS:

- A. Each Contractor shall bring to the attention of the Commissioner, any material encountered during execution of the Work that the Contractor suspects to be hazardous.
- B. The Commissioner shall determine whether such Contractor shall perform tests to determine if the material is hazardous. A change to the Contract price may be provided, subject to the applicable provisions of the Contract.



- C. If the material is found to be hazardous, the Commissioner may direct such Contractor to remediate the hazard and a change to the Contract price may be provided, subject to the applicable provisions of the Contract.

PART III – EXECUTION

3.1 EMERGENCY SUSPENSION OF WORK:

- A. When a Contractor is notified by the Commissioner of noncompliance with the safety provisions of the Contract, that Contractor shall immediately, unless otherwise instructed, correct the unsafe condition, at no additional cost to the City.
- B. If the Contractor fails to comply promptly, all or part of the Work may be stopped by notice from the Commissioner.
- C. When, in the opinion of the Commissioner, the Contractor has taken satisfactory corrective action, the Commissioner shall provide written notice to the Contractor that work may resume.
- D. The Contractor shall not be allowed any extension of time or compensation for damages in connection with a work stoppage for an unsafe condition.

3.2 PROTECTION OF PERSONNEL:

- A. Each Contractor shall take all necessary precautions to prevent injury to the public, occupants, or damage to property of others. The public and occupants includes all persons not employed by the Contractor or subcontractor(s).
- B. Whenever practical, the work area shall be fenced, barricaded or otherwise blocked off from the Public or occupants to prevent unauthorized entry into the work area, in compliance with the requirements of Section 01 50 00, TEMPORARY FACILITIES, SERVICES AND CONTROLS, and including, without limitation, the following:
 - 1. Provide traffic barricades and traffic control signage where construction activities occur in vehicular areas.
 - 2. Corridors, aisles, stairways, doors and exit ways shall not be obstructed or used in a manner to encroach upon routes of ingress or egress utilized by the public or occupants, or to present an unsafe condition to the public or occupants.
 - 3. Store, position and use equipment, tools, materials, scraps and trash in a manner that does not present a hazard to the public or occupant by accidental shifting, ignition or other hazardous activity.
 - 4. Store and transport refuse and debris in a manner to prevent unsafe and unhealthy conditions for the public and occupants. Cover refuse containers, and remove refuse on a frequent regular basis acceptable to the Resident Engineer. Use tarpaulins or other means to prevent loose transported materials from dropping from trucks or other vehicles.

3.3 ENVIRONMENTAL PROTECTION:

- A. Dispose of solid, liquid and gaseous contaminants in accordance with local codes, laws, ordinances and regulations.
- B. Comply with applicable federal, state and local noise control laws, ordinances and regulations, including but not limited to 29 CFR 1910.95, 29 CFR 1926.52 and NYC Administrative Code Chapter 28 of Title 15.

END OF SECTION 01 35 26



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
MULTIPLE CONTRACT PROJECTS
Issue Date - January 15, 2015

NO TEXT

SAFETY REQUIREMENTS PROCEDURES
01 35 26 - 4



**SECTION 01 35 91
HISTORIC TREATMENT PROCEDURES**

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 35 91.

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This Section includes administrative and procedural requirements for the historic treatment of Designated Landmark Structures and structures of Landmark/Historical significance, as identified in the Addendum. Specific requirements are indicated in other sections of the project specifications.
- B. This Section includes, without limitation, the following:
1. Storage and protection of existing historic materials.
 2. Temporary protection of historic materials during construction.
 3. General Protection
 4. Protection during use of heat-generating equipment.
 5. Photographic Documentation
 6. NYC Landmarks Preservation Commission Final Approval signoffs.

1.3 RELATED SECTIONS: include without limitation the following:

- A. Section 01 10 00 SUMMARY
- B. Section 01 32 33 PHOTOGRAPHIC DOCUMENTATION
- C. Section 01 33 00 SUBMITTAL PROCEDURES
- D. Section 01 77 00 CLOSEOUT PROCEDURES
- E. Section 01 78 39 CONTRACT RECORD DOCUMENTS

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.



- C. **Landmark Structure or Site:** Any building or site which has been designated as a landmark, or any building or site within a landmark district, as designated by the New York City Landmarks Preservation Commission or the New York State Historic Preservation Office.
- D. **Landmark Quality Structure:** Any building which has been determined by the City to be of landmark quality and/or historical significance.
- E. **Preservation:** To apply measures necessary to sustain the existing form, integrity, and materials of a historic property. Work may include preliminary measures to protect and stabilize the property.
- F. **Rehabilitation:** To make possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features that convey its historical, cultural, or architectural values.
- G. **Restoration:** To accurately depict the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and the reconstruction of missing features from the restoration period.
- H. **Reconstruction:** To reproduce in the exact form and detail a building, structure, or artifact as it appeared at a specific period in time.
- I. **Stabilize:** To apply measures designed to reestablish a weather-resistant enclosure and the structural reinforcement of an item or portion of the building while maintaining the essential form as it exists at present.
- J. **Protect and Maintain:** To remove deteriorating corrosion, reapply protective coatings, and install protective measures such as temporary guards; to provide the least degree of intervention.
- K. **Replace:** To duplicate and replace entire features with new material in kind. Replacement includes the following conditions:
 - 1. **Duplication:** Includes replacing elements damaged beyond repair or missing. Original material is indicated as the pattern for creating new duplicated elements.
 - 2. **Replacement with New Materials:** Includes replacement with new material when original material is not available as patterns for creating new duplicated elements.
- L. **Replacement with Substitute Materials:** Includes replacement with compatible substitute materials. Substitute materials are not allowed, unless otherwise indicated.
- M. **Remove:** To detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- N. **Remove and Salvage:** To detach items from existing construction and deliver them to the City ready for reuse.
- O. **Remove and Reinstall:** To detach items from existing construction, repair and clean them for reuse, and reinstall them where indicated.
- P. **Existing to Remain or Retain:** Existing items of construction that are not to be removed and that are not otherwise indicated to be removed and salvaged, or removed and reinstalled.
- Q. **Material in Kind:** Material that matches existing materials, as much as possible, in species, cut, color, grain, and finish.



1.5 SUBMITTALS:

- A. **Historic Treatment Program:** The Contractor responsible for Historic Treatment Work shall submit a written plan for each phase or process, including protection of surrounding materials during operations. Describe in detail materials, methods, and equipment to be used for each phase of work.
- B. **Alternative Methods and Materials:** If alternative methods and materials to those indicated are proposed for any phase of work, submit for Commissioner's approval a written description including evidence of successful use on other comparable projects, and program of testing to demonstrate effectiveness for use on this Project.
- C. **Qualification Data:** For historic treatment specialists as specified and required by individual sections of the project specifications.
- D. **Photographs for Designated Landmark Structures:** Submit photographs in accordance with Section 01 32 33, PHOTOGRAPHIC DOCUMENTATION and as described in this section.
- E. **Record Documents:** Include modifications to manufacturer's written instructions and procedures, as documented in the historic treatment preconstruction conference and as the Work progresses.

1.6 QUALITY ASSURANCE:

- A. **Special Experience Requirements:** Special Experience Requirements may apply to the firm that will provide Historic Treatment Services. If applicable, such Special Experience Requirements are set forth in the Bid Booklet and the Addendum.
- B. **Historic Treatment Preconstruction Conference:** The Resident Engineer will schedule and hold a preconstruction meeting at the site in accordance with Section 01 31 00, PROJECT MANAGEMENT AND COORDINATION.
 - 1. Review manufacturer's written instructions for precautions and effects of products and procedures on building materials, components, and vegetation.
 - a. Record procedures established as a result of the review and distribute to affected parties.

1.7 STORAGE AND PROTECTION OF HISTORIC MATERIALS:

- A. **Removed and Salvaged Historic Materials:** As specified and required by individual sections of the project specifications.
- B. **Removed and Reinstalled Historic Materials:** As specified and required by individual sections of the project specifications.
- C. **Existing Historic Materials to Remain:** Protect construction indicated to remain against damage and soiling during historic treatment. When permitted by the Commissioner, items may be removed to a suitable, protected storage location during historic treatment and reinstalled in their original locations after historic treatment operations are complete.
- D. **Storage and Protection:** When removed from their existing location, store historic materials, at a location acceptable to the Commissioner, within a weather tight enclosure where they are protected from wetting by rain, snow, or ground water, and temperature variations. Secure stored materials to protect from theft.
 - 1. Identify removed items with an inconspicuous mark indicating their original location.

PART II – PRODUCTS (Not Used)



PART III – EXECUTION

3.1 PROTECTION, GENERAL:

- A. Comply with manufacturer's written instructions for precautions and effects of products and procedures on adjacent building materials, components, and vegetation.
- B. Ensure that supervisory personnel are present when work begins and during its progress.
- C. Temporary Protection of Historic Materials during Construction:
 - 1. Protect existing materials during installation of temporary protections and construction. Do not deface or remove existing materials.
 - 2. Attachments of temporary protection to existing construction shall be approved by the Commissioner prior to installation.
- D. Protect landscape work adjacent to or within work areas as follows:
 - 1. Provide barriers to protect tree trunks.
 - 2. Bind spreading shrubs.
 - 3. Use coverings that allow plants to breathe and remove coverings at the end of each day. Do not cover plant material with a waterproof membrane for more than 8 hours at a time.
 - 4. Set scaffolding and ladder legs away from plants.
- E. Existing Drains: Prior to the start of work or any cleaning operations, test drains and other water removal systems to ensure that drains and systems are functioning properly. Notify Commissioner immediately of drains or systems that are stopped or blocked. Do not begin Work of this Section until the drains are in working order.
 - 1. Provide a method to prevent solids, including stone or mortar residue, from entering the drains or drain lines. Clean out drains and drain lines that become blocked or filled by sand or any other solids because of work performed under this Contract.
 - 2. Protect storm drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.

3.2 PROTECTION DURING USE OF HEAT-GENERATING EQUIPMENT:

- A. No roofing work requiring the use of an open flame shall be permitted on any Designated Landmark Structure whose roof or wall structure is made of wood or primarily of wood.
- B. Comply with the following procedures while performing work with heat-generating equipment, including welding, cutting, soldering, brazing, paint removal with heat, and other operations where open flames or implements utilizing heat are used:
 - 1. Obtain Commissioner's approval for operations involving use of open-flame or welding equipment.
 - a. Notification shall be given for each occurrence and location of work with heat-generating equipment.
 - 2. As far as practical, use heat-generating equipment in shop areas or outside the building.
 - 3. Before work with heat-generating equipment commences, furnish personnel to serve as a fire watch (or watches) for location(s) where work is to be performed.
 - 4. Do not perform work with heat-generating equipment in or near rooms or in areas where flammable liquids or explosive vapors are present or thought to be present. Use a combustible gas indicator test to ensure that the area is safe.



5. Remove and keep the area free of combustibles, including, rubbish, paper, waste, etc., within area of operations.
6. If combustible material cannot be removed, provide fireproof blankets to cover such materials.
7. Where possible, furnish and use baffles of metal or gypsum board to prevent the spraying of sparks or hot slag into surrounding combustible material.
8. Prevent the extension of sparks and particles of hot metal through open windows, doors, holes, and cracks in floors, walls, ceilings, roofs, and other openings.
9. Inspect each location of the day's work not sooner than 30 minutes after completion of operations to detect hidden or smoldering fires and to ensure that proper housekeeping is maintained.

- C. Where sprinkler protection exists and is functional, maintain it without interruption while operations are being performed. If operations are performed close to automatic sprinkler heads, shield the individual heads temporarily with guards.

3.3 PHOTOGRAPHIC DOCUMENTATION:

- A. Photographs for Designated Landmark Structures: Show existing conditions prior to any historic treatments, including one overall photograph and two close-up photographs of all areas of work affected. Show one overall photograph and two close-up photographs of all areas of work after the successful execution of all historical treatments.

3.4 NEW YORK CITY LANDMARKS PRESERVATION COMMISSION FINAL APPROVALS SIGNOFF:

- A. For all projects involving a Landmark Structure or Site, the GC Contractor, at the completion of the work, shall submit to the Commissioner, in accordance with Section 01 78 39, CONTRACT RECORD DOCUMENTS, all documentation concerning the successful execution of all historic treatments. This shall include, but not be limited to, copies of all before and after photographs of historic treatments, one copy of the Contractor's as-built drawings, copies of testing and analysis results, including cleaning, mortar analysis, pointing mortars and all other information pertaining to work performed under the New York City Landmarks Preservation Commission jurisdiction.

END OF SECTION 01 35 91



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
MULTIPLE CONTRACT PROJECTS
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NO TEXT

HISTORIC TREATMENT PROCEDURES
01 35 91 - 6



SECTION 01 40 00
QUALITY REQUIREMENTS

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions; (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This Section includes the following:
1. Definitions
 2. Conflicting Requirements
 3. Quality Assurance
 4. Quality Control
 5. Approval of Materials
 6. Special Inspections (Controlled Inspection)
 7. Inspections by Other City Agencies
 8. Certificates of Approval
 9. Acceptance Tests
 10. Repair and Protection
- B. This Section includes administrative and procedural requirements for quality control to assure compliance with quality requirements specified in the Contract Documents.
- C. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
- D. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
- E. Provisions of this Section do not limit requirements for each Contractor to provide quality-assurance and -control services required by the Commissioner or authorities having jurisdiction.
- F. Specific test and inspection requirements are specified in the individual sections of the Specifications.
- G. LEED: Refer to the Addendum to identify whether this project is designed to comply with a Certification Level according to the U.S. Green Building Council's Leadership in Energy & Environmental Design (LEED) Rating System, as specified in Section 01 81 13, "SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS."
- H. COMMISSIONING: Refer to the Addendum to identify whether this project will be Commissioned by an independent third party under separate contract with the City of New York. Commissioning shall be in accordance with ASHRAE and USGBC LEED-NC procedures, as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS. Each Contractor shall cooperate with the commissioning agent and provide whatever assistance is required.



1.3 RELATED SECTIONS: Include without limitation the following:

- A. Section 01 10 00 SUMMARY
- B. Section 01 31 00 PROJECT MANAGEMENT AND COORDINATION
- C. Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION
- D. Section 01 33 00 SUBMITTAL PROCEDURES
- E. Section 01 77 00 CLOSEOUT PROCEDURES
- F. Section 01 78 39 CONTRACT RECORD DOCUMENTS

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.
- C. Commissioning: A Total Quality Assurance process that includes checking the design and installation of equipment, as well as performing functional testing of the same to confirm that the installed equipment is operating and in conformance with the Contract Documents and the City's requirements.

1.5 CONFLICTING REQUIREMENTS:

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, the Contractor shall comply with the most stringent requirement as determined by the Commissioner. The Contractor shall refer any uncertainties and/or conflicting requirements to the Commissioner for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. The Contractor shall refer any uncertainties to the Commissioner for a decision before proceeding.

1.6 QUALITY ASSURANCE:

- A. General: Qualifications paragraphs in this Sub-Section establish the minimum qualification levels required. Individual Specification Sections specify additional requirements.
- B. Installer Qualifications: Special Experience Requirements may apply to the firm that will install, erect or assemble specified work required for the Project. If applicable, such Special Experience Requirements are set forth in the Bid Booklet and the Addendum.



- C. **Manufacturer Qualifications:** Special Experience Requirements may apply to the firm that will manufacture equipment, products or systems specified for the Project. If applicable, such Special Experience Requirements are set forth in the Bid Booklet and the Addendum.
- D. **Fabricator Qualifications:** Special Experience Requirements may apply to the firm that will fabricate material, products or systems specified for the Project. If applicable, such Special Experience Requirements are set forth in the Bid Booklet and the Addendum.
- E. **Professional Engineer Qualifications:** A professional engineer who is licensed to practice in the State of New York and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.
- F. **Factory-Authorized Service Representative Qualifications:** An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- G. **Mockups:** Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
 - 1. Build mockups in location and of size indicated or, if not indicated, as directed by the Resident Engineer.
 - 2. Notify Resident Engineer seven (7) days in advance of dates and times when mockups will be constructed.
 - 3. Demonstrate the proposed range of aesthetic effects and workmanship.
 - 4. Obtain Design Consultant's approval of mockups before starting work, fabrication, or construction.
 - 5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 - 6. Demolish and remove mockups when directed, unless otherwise directed or indicated.

1.7 **QUALITY CONTROL:**

- A. **City's Responsibilities:** Where quality-control services are indicated as the City's responsibility in the Specifications, the City will engage a qualified testing agency to perform these services.
 - 1. **COST OF TESTS BORNE BY THE CITY:** Where the City directs tests to be performed to determine compliance with the Specifications regarding materials or equipment, and where such compliance is ascertained as a result thereof, the City will bear the cost of such tests.
 - 2. The City will furnish each Contractor with names, addresses, and telephone numbers of testing entities engaged and a description of the types of testing and inspecting they are engaged to perform.
 - 3. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to the appropriate Contractor.
- B. **Contractor's Responsibility:** Tests and inspections not explicitly assigned to the City are the Contractor's responsibility. Unless otherwise indicated, the Contractor shall provide quality-control services as set forth in the Specifications and those required by Authorities having jurisdiction. The Contractor shall provide quality-control services required by Authorities having jurisdiction, whether specified or not.
 - 1. **COST OF TESTS BORNE BY CONTRACTOR** – In the case of tests which are specifically called for in the Specifications to be provided by the Contractor or tests which are required by any Authority having jurisdiction, but are not indicated as the responsibility of the City, the cost thereof shall be borne by the Contractor and shall be deemed to be included in the Contract price. The expenses of the testing personnel assigned by the City shall not be the Contractor's obligation. The Contractor shall reimburse the City for expenditures incurred in providing tests on materials and



- equipment submitted by the Contractor as the equivalent of that specifically named in the Specifications and rejected for non-compliance.
2. Where services are indicated as Contractor's responsibility, the Contractor shall engage a qualified testing agency to perform these quality-control services. Any testing agency engaged by the Contractor to perform quality control services is subject to prior approval by the Commissioner.
 3. The Contractor shall not employ same entity engaged by the City, unless agreed to in writing by the Commissioner.
 4. The Contractor shall notify testing agencies and the Resident Engineer at least 48 hours in advance of the date and time for the performance of Work that requires testing or inspecting.
 5. Where quality-control services are indicated as Contractor's responsibility, the Contractor shall submit a certified written report, in triplicate to the Commissioner, of each quality-control service.
 6. Testing and inspecting requested by the Contractor and not required by the Contract Documents are Contractor's responsibility.
 7. The Contractor shall submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. **Manufacturer's Field Services:** Where indicated, the Contractor shall engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Results shall be submitted in writing as specified in Section 01 33 00 SUBMITTAL PROCEDURES.
- D. **Retesting/Re-inspecting:** Regardless of whether original tests or inspections were the Contractor's responsibility, the Contractor shall provide quality-control services, including retesting and re-inspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- E. **Associated Services:** The Contractor shall cooperate with entities performing required tests, inspections, and similar quality-control services, and shall provide reasonable auxiliary services as requested. The Contractor shall notify the testing agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist testing entity in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 5. Delivery of samples to testing entities.
 6. Design mix proposed for use for material mixes that require control by the testing entity.
 7. Security and protection for samples and for testing and inspecting equipment at the Project site.
- F. **Coordination:** Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
 2. Coordinate and cooperate with the Commissioning Authority/Agent as applicable for start-up, inspection and functional testing in the implementation of the Commissioning Plan.
- G. **Manufacturer's Directions:** Where the Specifications provide that the manufacturer's directions are to be used, such printed directions shall be submitted to the Commissioner.
- H. **Inspection of Material:** In the event that the Specifications require the Contractor to engage the services of an entity to witness and inspect any material especially manufactured or prepared for use in or part of the permanent construction, such entity shall be subject to prior written approval by the Commissioner.
1. **NOTICE** - The Contractor shall give notice in writing to the Commissioner sufficiently in advance of its intention to commence the manufacture or preparation of materials especially manufactured or



prepared for use in or as part of the permanent construction. Such notice shall contain a request for inspection, the date of commencement and the expected date of completion of the manufacture or preparation of materials. Upon receipt of such notice, the Commissioner will arrange to have a representative present at such times during the manufacture as may be necessary to inspect the materials, or the Commissioner will notify the Contractor that the inspection will be made at a point other than the point of manufacture, or the Commissioner will notify the Contractor that inspection will be waived.

- I. **No Shipping Before Inspection:** The Contractor shall comply with the foregoing before shipping any material.
- J. **Certificate of Manufacture:** When the Commissioner so requires, the Contractor shall furnish to the Commissioner authoritative evidence in the form of Certificates of Manufacture that the materials to be used in the work have been manufactured and tested in conformity with the Specifications. These certificates shall include copies of the results of physical tests and chemical analyses where necessary, that have been made directly on the product, or on similar products being fabricated by the manufacturer. This may include such approvals as B.S.A., M.E.A., B.E.C. Advisory Board, etc.
- K. **Acceptance:** When materials or manufactured products shall comprise such quantity that it is not practical to make physical tests or chemical analyses directly on the product furnished, a certificate stating the results of such tests or analyses of similar materials which were concurrently produced may, at the discretion of the Commissioner, be considered as the basis for the acceptance of such material or manufactured product.
- L. **Testing Compliance:** The testing personnel shall make the necessary inspections and tests, and the reports thereof shall be in such form as will facilitate checking to determine compliance with the Specifications, indicating thereon all analyses and/or test data and interpreted results thereof.
- M. **Reports:** Six (6) copies of the reports shall be submitted and authoritative certification thereof must be furnished to the Commissioner as prerequisite for the acceptance of any material or equipment.
- N. **Rejections:** If, in making any test, it is ascertained by the Commissioner that the material or equipment does not comply with the Specifications, the Contractor will be notified thereof, and will be directed to refrain from delivering said materials or equipment, or to promptly remove it from the site or from the work and replace it with acceptable material at no additional cost to the City.
- O. **Furnish Designated Materials:** Upon rejection of any material or equipment submitted as the equivalent of that specifically named in the Specifications, the Contractor shall immediately proceed to furnish the designated material or equipment.

1.8 APPROVAL OF MATERIALS:

- A. **Local Laws:** All materials, appliances and types or methods of construction shall be in accordance with the Specifications and shall in no event be less than that necessary to conform to the requirements of the New York City Construction Codes, Administrative Code and Charter of the City of New York.
- B. **Approval of Manufacturer:** The names of proposed manufacturers, material suppliers, and dealers who are to furnish materials, fixtures, equipment, appliances or other fittings shall be submitted to the Commissioner for approval, as early as possible, to afford proper review and analysis. No manufacturer will be approved for any materials to be furnished under the Contract unless it shall have a plant of ample capacity and shall have successfully produced similar products. All approvals of materials and equipment that are legally required by the New York City Construction Codes and other governing Authorities must be obtained prior to installation.



- C. All Materials, fixtures, fittings, supplies and equipment furnished under the Contract shall be new and unused, except as approved by the Commissioner, and of standard first-grade quality and of the best workmanship and design. The City of New York encourages the use of recycled products where practical.
- D. **INFORMATION TO SUPPLIERS** - In asking for prices on materials under any item of the Contract, the Contractor shall provide the manufacturer or dealer with such complete information from the Specifications and Contract Drawings as may in any case be necessary, and in every case the Contractor shall inform the manufacturer or dealer of all the General Conditions and requirements herein contained.

1.9 SPECIAL INSPECTIONS:

A. SPECIAL INSPECTIONS:

1. Inspection of selected materials, equipment, installation, fabrication, erection or placement of components and connections made during the progress of the Work to ensure compliance with the Contract Documents and provisions of the New York City Construction Codes, shall be made by a Special Inspector. The City of New York will retain the services of the Special Inspector and bear the costs for the performance of Special Inspections in compliance with NYC Construction Codes requirements or as additionally may be called for in the project specifications, except as noted below for Form TR-3: Technical Report for Concrete Design Mix. The Special Inspector shall be an entity compliant with the requirements of the New York City Construction Codes. The Contractor shall notify the relevant Special Inspector in writing at least 72 hours before the commencement of any work requiring special inspection.
2. Form TR3: Technical Report Concrete Design Mix: The Contractor shall be responsible for, and bear all costs associated with the filing and securing of approvals, if any, for Form TR3: Technical Report Concrete Design Mix, including, but not limited to, engaging the services of a New York City licensed Concrete Testing Lab for the review and approval of concrete design mix, testing, signatures and professional seals, etc., compliant with NYC Department of Buildings requirements, for each concrete design mix.
3. The Contractor shall notify the relevant Special Inspector in writing at least 72 hours before the commencement of any work requiring Special Inspection. The Contractor shall be responsible for, and bear related costs to assure that all construction or work shall remain accessible and exposed for inspection purposes until the required inspection is completed.
4. Inspections and tests performed under "Special Inspection" shall not relieve the Contractor of the responsibility to comply with the Contract Documents, and that there is no warranty given to the Contractor by the City of New York in connection with such inspection and tests or certifications made under "Special Inspections".
5. The Contractor must coordinate with the Resident Engineer or DDC Project Manager to provide access and schedule the work for inspection by the Special Inspector.

1.10 INSPECTIONS BY OTHER CITY AGENCIES:

- A. **Letter of Completion:** Just prior to substantial completion of this Project, the Commissioner will file with the Department of Buildings, an application for a Letter of Completion or a Certificate of Occupancy for the structure.
- B. **Final Inspections:** In connection with the above mentioned application for a Letter of Completion or a Certificate of Occupancy and before certificates of final payments are issued, each Contractor will be required to arrange for all applicable final inspections by the inspection staff of the Department of Buildings, Fire Department or other Governmental Agencies having jurisdiction, and secure all reports, sign offs, certificates, etc., by such inspection staff or other governmental agencies, in order that a Letter of Completion or Certificate of Occupancy can be issued promptly.



1.11 CERTIFICATES OF APPROVAL:

- A. Responsibility: Each Contractor shall be responsible for and shall obtain all final approvals for the work installed under its Contract in the form of such certificates that are required by all governmental agencies having jurisdiction over the work of the Contract.
- B. Transmittal: All such certificates shall be forwarded to the Commissioner through the Resident Engineer.

1.12 ACCEPTANCE TESTS:

- A. Government Agencies: All equipment and appliances furnished and installed under the Contract shall conform with the requirements of the Specifications, and shall in no event be less than that necessary to comply with the minimum requirements of the law and all of the governmental agencies having jurisdiction.
- B. Notice of Tests: Whenever the Specifications and/or any governmental agency having jurisdiction requires the acceptance test, the Contractor shall give written notice to all concerned of the time when these tests will be conducted.
- C. Energy: The City will furnish all energy, fuel, water and light required for tests.
- D. Labor and Materials: The Contractor shall furnish labor and all other material and instruments necessary to conduct the acceptance tests at no additional cost to the City.
- E. Certificates: The final acceptance by the Commissioner shall be contingent upon the Contractor delivering to the Commissioner all necessary certificates evidencing compliance in every respect with the requirements of the regulatory agencies having jurisdiction.
- F. Results: If the results of tests and Special Inspections indicate that the material or procedures do not meet requirements as set forth on the Contract Drawings or in the Specifications or are otherwise unsatisfactory, the Contractor shall only proceed as directed by the Resident Engineer. Additional costs resulting from retesting, re-inspecting, replacing of material and/or damage to the Work and/or Work of other Contractors, and any delay caused to the schedule, shall be borne by the Contractor.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION

3.1 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, the Contractor shall repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.



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END OF SECTION 01 40 00



**SECTION 01 42 00
REFERENCES**

PART I – GENERAL

1.1 RELATED DOCUMENTS:

The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DEFINITIONS:

REFER TO THE ADDENDUM, ARTICLE IX, FOR ADDITIONAL DEFINITIONS AND REVISIONS TO THE CONTRACT AND SPECIFICATIONS

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. "APPROVED," ETC. - "Approved," "acceptable," "satisfactory," and words of similar import shall mean and intend approved, acceptable or satisfactory to the Commissioner.
- C. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.
- D. DIRECTED," "REQUIRED," ETC.- Wherever reference is made in the Contract to the work or its performance, the terms "directed," "required," "permitted," "ordered," "designated," "prescribed," "determined," and words of similar import shall, unless expressed otherwise, imply the direction, requirements, permission, order, designation or prescription of the Commissioner.
- E. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings.



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1.3 CODES, AGENCIES AND REGULATIONS:

A.D.A.A.G.	Americans with Disabilities Act (ADA) – Architectural Barriers Act (ABA)
B.G.& E.	Bureau of Gas and Electricity of the City of New York
B.S.& A.	New York City Board of Standards and Appeals
DOE	Department of Energy
E.C.C.C.N.Y.S.	Energy Conservation Construction Code of New York State
EPA	Environmental Protection Administration
N.Y.C.C.C.	New York City Construction Codes – comprised of New York City Plumbing Code New York City Building Code New York City Mechanical Code New York City Fuel Gas Code
N.Y.S.D.O.L	New York State Department of Labor
N.Y.C.D.E.P	New York City Department of Environmental Protection
N.Y.C.E.C.	New York City Electrical Code
N.Y.C.E.C.C	New York City Energy Conservation Code
N.Y.C.F.C	New York City Fire Code
N.Y.S...D.E.C.	New York State Department of Environmental Conservation
O.S.H.A.	Occupational Safety & Health Administration

1.4 INDUSTRY STANDARDS:

- A. STANDARD REFERENCES – Unless otherwise specifically indicated in the Contract Documents, whenever reference is made to the furnishing of materials or testing thereof that conforms to the standards of any technical society, organization or body, it shall be construed to mean the latest standard, code, specification adopted and published by that technical society, organization or body, as of the date of the bid opening, unless the provisions of the New York City Construction Codes adopts a different or earlier dated version of such standard.
- B. APPLICABILITY OF STANDARDS: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect, to the extent referenced, as if bound or copied directly into the Contract Documents. Such standards are made a part of the Contract Documents by reference.
- C. CONFLICTING REQUIREMENTS: Where compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantity or quality, comply with the most stringent requirements. Immediately refer uncertainties, and requirements that are different but apparently equal, to the Commissioner in writing for a decision before proceeding.
- D. STANDARD SPECIFICATIONS - When no reference is made to a code, standard or specification, the Standard Specifications of the ASTM or the AIEE, as the case may be, shall govern.
- E. REFERENCES - Reference to a technical society, organization or body may be made in the Specifications by abbreviations. Abbreviations and acronyms used in the Specifications and other Contract Documents mean the associated name. The following names are subject to change and are



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believed, but are not assured, to be accurate and up-to-date as of the Issue Date of the Contract Documents.

AA	Aluminum Association, Inc. (The)
AAADM	American Association of Automatic Door Manufacturers
AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
AATCC	American Association of Textile Chemists and Colorists (The)
ABAA	Air Barrier Association of America
ABMA	American Bearing Manufacturers Association
ACI	ACI International (American Concrete Institute)
ACPA	American Concrete Pipe Association
AEIC	Association of Edison Illuminating Companies, Inc. (The)
AF&PA	American Forest & Paper Association
AGA	American Gas Association
AGC	Associated General Contractors of America (The)
AGMA	American Gear Manufacturer Association
AHA	American Hardboard Association (Now part of CPA)
AHAM	Association of Home Appliance Manufacturers
AI	Asphalt Institute
AIA	American Institute of Architects (The)
AIEE	American Institute of Electrical Engineers
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ALCA	Associated Landscape Contractors of America (Now PLANET - Professional Landcare Network)

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ALSC	American Lumber Standard Committee, Incorporated
ALI	Automotive Lift Institute
AMCA	Air Movement and Control Association International, Inc.
ANSI	American National Standards Institute
AOSA	Association of Official Seed Analysts, Inc.
APA	APA - The Engineered Wood Association
APA	Architectural Precast Association
API	American Petroleum Institute
ARI	Air-Conditioning & Refrigeration Institute
ARMA	Asphalt Roofing Manufacturers Association
ASA	American Standards Association
ASAE	American Society of Agricultural Engineers
ASCE/SEI	American Society of Civil Engineers, Structural Engineering Institute
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASSE	American Society of Sanitary Engineering
ASTM	ASTM International (American Society for Testing and Materials International)
AWCI	AWCI International (Association of the Wall and Ceiling Industry International)
AWCMA	American Window Covering Manufacturers Association (Now WCSC)
AWI	Architectural Woodwork Institute
AWPA	American Wood-Preservers' Association
AWSC	American Welding Society
AWWA	American Water Works Association
BHMA	Builders Hardware Manufacturers Association
BIA	Brick Industry Association (The)



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BICSI	BICSI
BIFMA	BIFMA International (Business and Institutional Furniture Manufacturer's Association International)
BISSC	Baking Industry Sanitation Standards Committee
CIBSE	Chartered Institute of Building Services Engineers
CCC	Carpet Cushion Council
CDA	Copper Development Association
CEA	Canadian Electricity Association
CFFA	Chemical Fabrics & Film Association, Inc.
CGA	Compressed Gas Association
CGSB	Canadian General Standards Board
CIMA	Cellulose Insulation Manufacturers Association
CIPRA	Cast Iron Pipe Research Association
CISCA	Ceilings & Interior Systems Construction Association
CISPI	Cast Iron Soil Pipe Institute
CLFMI	Chain Link Fence Manufacturers Institute
CPA	Composite Panel Association
CPPA	Corrugated Polyethylene Pipe Association
CPSC	Consumer Product Safety Commission
CRI	Carpet & Rug Institute (The)
CRSI	Concrete Reinforcing Steel Institute
CSA	Canadian Standards Association
CSI	Cast Stone Institute
CSI	Construction Specifications Institute (The)
CSSB	Cedar Shake & Shingle Bureau
CTI	Cooling Technology Institute (Formerly: Cooling Tower Institute)
DASMA	Door and Access Systems Manufacturer's Association International

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DHI	Door and Hardware Institute
DOC	U.S. Department of Commerce – National Institute of Standards and Technology
EIA	Electronic Industries Alliance
DOJ	U.S. department of Justice
EIMA	EIFS Industry Members Association
DOL	U.S. Department of Labor
EJCDC	Engineers Joint Contract Documents Committee
DOTn	U.S. Department of Transportation
EN	European Committee of Standards
EJMA	Expansion Joint Manufacturers Association, Inc.
ESD	ESD Association
EVO	Efficiency Valuation Organization
FEMA	Federal Emergency Management Agency
FIBA	Federation Internationale de Basketball Amateur (The International Basketball Federation)
FIVB	Federation Internationale de Volleyball (The International Volleyball Federation)
FMG	FM Global (Formerly: FM - Factory Mutual System)
FMRC	Factory Mutual Research (Now FMG)
FRSA	Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.
FSA	Fluid Sealing Association
FSC	Forest Stewardship Council
GA	Gypsum Association
GANA	Glass Association of North America
GRI	(Now GSI)
GS	Green Seal
GSI	Geosynthetic Institute



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HI	Hydraulic Institute
HI	Hydronics Institute
HMMA	Hollow Metal Manufacturers Association (Part of NAAMM)
HPVA	Hardwood Plywood & Veneer Association
HPW	H. P. White Laboratory, Inc.
HUD	U.S. Department of Housing and Urban Development
IAPMO	International Association of Plumbing and Mechanical Officials
IAS	International Approval Services (Now CSA International)
IBF	International Badminton Federation
ICC	International Code Council, Inc.
ICEA	Insulated Cable Engineers Association, Inc.
ICRI	International Concrete Repair Institute, Inc.
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers, Inc. (The)
IESNA	Illuminating Engineering Society of North America
IEST	Institute of Environmental Sciences and Technology
IGCC	Insulating Glass Certification Council
IGMA	Insulating Glass Manufacturers Alliance
ILI	Indiana Limestone Institute of America, Inc.
ISO	International Organization for Standardization
ISSFA	International Solid Surface Fabricators Association
ITS	Intertek
ITU	International Telecommunication Union
KCMA	Kitchen Cabinet Manufacturers Association
LMA	Laminating Materials Association (Now part of CPA)
LPI	Lightning Protection Institute

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MBMA	Metal Building Manufacturers Association
MFMA	Maple Flooring Manufacturers Association, Inc.
MFMA	Metal Framing Manufacturers Association
MH	Material Handling (Now MHIA)
MHIA	Material Handling Industry of America
MIA	Marble Institute of America
MPI	Master Painters Institute
MSS	Manufacturers Standardization Society of The Valve and Fittings Industry Inc.
NAAMM	National Association of Architectural Metal Manufacturers
NACE	NACE International (National Association of Corrosion Engineers International)
NADCA	National Air Duct Cleaners Association
NAGWS	National Association for Girls and Women in Sport
NAIMA	North American Insulation Manufacturers Association
NBGQA	National Building Granite Quarries Association, Inc.
NCAA	National Collegiate Athletic Association (The)
NCMA	National Concrete Masonry Association
NCPI	National Clay Pipe Institute
NCTA	National Cable & Telecommunications Association
NEBB	National Environmental Balancing Bureau
NECA	National Electrical Contractors Association
NeLMA	Northeastern Lumber Manufacturers' Association
NEMA	National Electrical Manufacturers Association
NETA	InterNational Electrical Testing Association
NFHS	National Federation of State High School Associations
NFPA	NFPA (National Fire Protection Association)
NFRC	National Fenestration Rating Council



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NGA	National Glass Association
NHLA	National Hardwood Lumber Association
NLGA	National Lumber Grades Authority
NIS	National Institute of Standards and Technology
NOFMA	NOFMA: The Wood Flooring Manufacturers Association (Formerly: National Oak Flooring Manufacturers Association)
NRCA	National Roofing Contractors Association
NRMCA	National Ready Mixed Concrete Association
NSF	NSF International (National Sanitation Foundation International)
NSSGA	National Stone, Sand & Gravel Association
NTMA	National Terrazzo & Mosaic Association, Inc. (The)
NTRMA	National Tile Roofing Manufacturers Association (Now TRI)
NWWDA	National Wood Window and Door Association (Now WDMA)
OPL	Omega Point Laboratories, Inc. (Acquired by ITS - Intertek)
PCI	Precast / Pre-stressed Concrete Institute
PDCA	Painting & Decorating Contractors of America
PDI	Plumbing & Drainage Institute
PGI	PVC Geomembrane Institute
PLANET	Professional Landcare Network (Formerly: ACLA - Associated Landscape Contractors of America)
PPS	Power Piping Society
PTI	Post-Tensioning Institute
RCSC	Research Council on Structural Connections
RFCI	Resilient Floor Covering Institute
RIS	Redwood Inspection Service
RMI	Rack Manufacturers Institute
RTI	(Formerly: NTRMA - National Tile Roofing Manufacturers Association) (Now TRI)



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SAE	SAE International
SCAQMD	South Coast Air Quality Management District
SCS	Scientific Certification System
SDI	Steel Deck Institute
SDI	Steel Door Institute
SEFA	Scientific Equipment and Furniture Association
SGCC	Safety Glazing Certification Council
SHBI	Steel Heating Boiler Institute
SIA	Security Industry Association
SIGMA	Sealed Insulating Glass Manufacturers Association (Now IGMA)
SJI	Steel Joist Institute
SMA	Screen Manufacturers Association
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
SMPTE	Society of Motion Picture and Television Engineers
SPFA	Spray Polyurethane Foam Alliance (Formerly: SPI/SPFD - The Society of the Plastics Industry, Inc.; Spray Polyurethane Foam Division)
SPIB	Southern Pine Inspection Bureau (The)
SPRI	Single Ply Roofing Industry
SSINA	Specialty Steel Industry of North America
SSPC	SSPC: The Society for Protective Coatings
STI	Steel Tank Institute
SWI	Steel Window Institute
SWRI	Sealant, Waterproofing, & Restoration Institute
TCA	Tile Council of America, Inc.
TIA/EIA	Telecommunications Industry Association/Electronic Industries Alliance
TMS	The Masonry Society



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TPI	Truss Plate Institute, Inc.
TPI	Turfgrass Producers International
TRI	Tile Roofing Institute (Formerly: RTI - Roof Tile Institute)
UL	Underwriters Laboratories Inc.
ULC	Underwriters Laboratories of Canada
UNI	Uni-Bell PVC Pipe Association
USAV	USA Volleyball
USC	United States Code
USGBC	U.S. Green Building Council
USITT	United States Institute for Theatre Technology, Inc.
WASTEC	Waste Equipment Technology Association
WCLIB	West Coast Lumber Inspection Bureau
WCMA	Window Covering Manufacturers Association (Now WCSC)
WCSC	Window Covering Safety Council (Formerly: WCMA - Window Covering Manufacturers Association)
WDMA	Window & Door Manufacturers Association (Formerly: NWWDA - National Wood Window and Door Association)
WI	Woodwork Institute (Formerly: WIC - Woodwork Institute of California)
WIC	Woodwork Institute of California (Now WI)
WMMPA	Wood Moulding & Millwork Producers Association
WRI	Wire Reinforcement Institute, Inc.
USEPA	United States Environmental Protection Agency
WSRCA	Western States Roofing Contractors Association
WWPA	Western Wood Products Association

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)



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END OF SECTION 01 42 00

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SECTION 01 50 00
TEMPORARY FACILITIES, SERVICES AND CONTROLS

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This section includes the following:
1. Temporary Water System
 2. Temporary Sanitary Facilities
 3. Temporary Electric Power, Temporary Lighting System, And Site Security Lighting:
 4. Temporary Heat
 5. Dewatering Facilities And Drains
 6. Temporary Field Office for Contractor
 7. Resident Engineer's Office
 8. Material Sheds
 9. Temporary Enclosures
 10. Temporary Partitions
 11. Temporary Fire Protection
 12. Work Fence Enclosure
 13. Rodent and Insect Control
 14. Plant Pest Control Requirements
 15. Project Identification Signage
 16. Security Guards/Fire Guards on Site
 17. Project Sign and Rendering
 18. Safety

1.3 RELATED SECTIONS: include without limitation the following:

- | | | |
|----|------------------|---------------------------------------|
| A. | Section 01 10 00 | SUMMARY |
| B. | Section 01 42 00 | REFERENCES |
| C. | Section 01 54 11 | TEMPORARY ELEVATORS AND HOISTS |
| D. | Section 01 54 23 | TEMPORARY SCAFFOLDS AND SWING STAGING |
| E. | Section 01 77 00 | CLOSE OUT PROCEDURES |

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Permanent Enclosure: As determined by the Commissioner, permanent or temporary roofing that is complete, insulated, and weather tight; exterior walls which are insulated and weather tight; and all openings that are closed with permanent construction or substantial temporary closures.



- C. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.5 SUBMITTALS:

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Reports: Submit reports of tests, inspections, meter readings and similar procedures for temporary use.

1.6 PROJECT CONDITIONS:

- A. Temporary Use of Permanent Facilities and Services: The Contractor responsible for the installation of each permanent facility, services, and controls shall be responsible for the operation, maintenance, and protection of each permanent facility and service while in use during construction before Final Acceptance by the City, regardless of previously assigned responsibilities.
- B. Install, operate, maintain and protect temporary facilities and controls.
1. Keep temporary services and facilities clean and neat in appearance.
 2. Operate temporary services in a safe and efficient manner.
 3. Relocate temporary services and facilities as needed as Work progresses.
 4. Do not overload temporary services and facilities or permit them to interfere with progress.
 5. Provide necessary fire prevention measures.
 6. Do not allow hazardous, dangerous or unsanitary conditions, or public nuisances to develop or persist on-site.

1.7 NON-REGULAR WORK HOURS (OVERTIME):

- A. The Contractor responsible for the installation of each permanent facility, services, and controls shall provide the temporary services, facilities and controls set forth in this Section during other than regular working hours if the Drawings and/or the Specifications indicate that the Work, or specific components thereof, must be performed during other than regular working hours. In such case, all costs for the provision of temporary services, facilities and controls during other than regular working hours shall be deemed included in the total Contract Price.
- B. The Contractor responsible for the installation of each permanent facility, services, and controls shall provide the temporary services, facilities and controls set forth in this Section during other than regular working hours if a change order is issued directing the Contractor to perform the Work, or specific components thereof, during other than regular working hours. In such case, compensation for the provision of temporary services, facilities and controls during other than regular working hours shall be provided through the change order.

1.8 SERVICES BEYOND COMPLETION DATE:

- A. The Contractor responsible for the installation of each permanent facility, services, and controls shall provide the temporary services, facilities and controls set forth in this Section until the date on which it completes all required work at the site, including all punch list work,



as certified in writing by the Resident Engineer, or earlier if so directed in writing by the Commissioner. The Contractor shall provide such temporary services, facilities and controls even if completion of all required work at the site occurs after the time fixed for such completion in Schedule A.

PART II – PRODUCTS

2.1 MATERIALS:

- A. Provide undamaged materials in serviceable condition and suitable for use intended.
- B. Tarpaulins: Waterproof, fire-resistant UL labeled with flame spread rating of 15 or less. For temporary enclosures, provide translucent, nylon-reinforced, laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.
- C. Water: Potable and in compliance with requirements of the Department of Environmental Protection.

2.2 EQUIPMENT:

- A. Provide undamaged equipment in serviceable condition and suitable for use intended.
- B. Water Hoses: Heavy-duty abrasive-resistant flexible rubber hoses, 100 feet (30 m) long with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.
- C. Electric Power Cords: Grounded extension cords.
 - 1. Provide hard-service cords where exposed to abrasion or traffic.
 - 2. Provide waterproof connectors to connect separate lengths of electric cords where single lengths will not reach areas of construction activity.
 - 3. Do not exceed safe length-voltage ratio.
- D. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART III – EXECUTION:

3.1 INSTALLATION, GENERAL:

- A. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities as approved by the Resident Engineer.

3.2 TEMPORARY WATER SYSTEM:

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB SECTION 3.2.A

- A. TEMPORARY WATER SYSTEM - NEW FACILITIES: During construction, the Plumbing Contractor shall furnish a Temporary Water System as set forth below.
 - 1. Immediately after the Commissioner has issued an order to start work, the GC Contractor shall file an application with the Dept. of Environmental Protection for the schedule of charges for water use during construction. The GC Contractor will be responsible for payment of water charges.



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2. Immediately after the Commissioner has issued an order to start work, the Plumbing Contractor shall file an application with the Department of Environmental Protection's Bureau of Water Supply and obtain a permit to install the temporary water supply system. The system shall be installed and maintained for the use of all Contractors and his/ her subcontractors. A copy of the above mentioned permit shall be filed with the Commissioner. The Plumbing Contractor shall provide temporary water main, risers and waste stacks as directed and install on each floor, outlets with two (2) 3/4" hose valve connections over a barrel installed on a steel pan. The Plumbing Contractor shall provide drains from the pans to the stack and house sewer and hose bibs to drain the water supply risers and mains. During winter months, the Plumbing Contractor shall take the necessary precautions to prevent the temporary water system from freezing. The Plumbing Contractor shall provide repairs to the temporary water supply system for the duration of the project until said temporary system is dismantled and removed.
3. Disposition of Temporary Water System: The Plumbing Contractor shall be responsible for dismantling the temporary water system when no longer required for the construction operations, or when replaced by the permanent water system installed for the project, or as otherwise directed by the Resident Engineer. All repair work resulting from the dismantling of the temporary water system shall be the responsibility of the GC Contractor .

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.2 E

B. TEMPORARY WATER SYSTEM - PROJECTS IN EXISTING FACILITIES:

1. When approved by the Commissioner, use of existing water service system will be permitted for temporary water service during construction, as long as system is cleaned and maintained in a condition acceptable to the Commissioner. At Substantial Completion, the Plumbing Contractor shall restore the existing water system to conditions existing before initial use.
2. The Plumbing Contractor shall be responsible for all repairs to the existing water service system permitted to be used for temporary water service during construction. The GC Contractor shall be responsible to maintain the facility in a clean condition on a daily basis, acceptable to the Commissioner.
3. The GC Contractor will be responsible for payment of water charges as directed by the Commissioner. Billing will be in accordance with the Department of Environmental Protection schedule of charges for Building Purposes.

C. WASH FACILITIES: The Plumbing Contractor shall install wash facilities supplied with potable water at convenient locations for personnel involved in handling materials that require wash-up for a healthy and sanitary condition.

1. Dispose of drainage properly.
2. Supply cleaning compounds appropriate for each condition.
3. Include safety showers, eyewash fountains and similar facilities for the convenience, safety and sanitation of personnel.

D. DRINKING WATER FACILITIES: The Plumbing Contractor shall provide drinking water fountains or containerized tap-dispenser bottled-drinking water units, complete with paper cup supplies. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 deg. F (7 to 13 deg. C).

E. OVERTIME USE: Whenever any Contractor(s) work before or after the regular work hours hereinafter specified under Subparagraph 3.2 F, or on a Saturday, Sunday or Holiday of any Contract, such Contractor(s) shall pay the Plumbing Contractor for the activation of the temporary water system and toilet facility services during such overtime periods. When more than one (1) Contractor is involved in overtime work, the costs thereof shall be prorated as determined by the Resident Engineer. When overtime is required by any or all Contractors on the work, the



provisions for payment for regular time use of the temporary water supply system as specified in Subparagraph 3.2 F shall apply.

- F. **ACTIVATION** - The Plumbing Contractor shall bear the cost of keeping the temporary water supply system activated from a period of time 15 minutes before the established starting time of that trade which starts work earliest in the morning, to 15 minutes after the established quitting time of that trade which stops work latest in the evening. This applies to every day in the week which is established as a regular working day for aforementioned trades and holds until completion and final acceptance of the work of the Plumbing Contractor or until the services are terminated by instructions from the Commissioner.

3.3 **TEMPORARY SANITARY FACILITIES:**

- A. The GC Contractor shall provide for toilets, wash facilities and drinking water fixtures in compliance with regulations and health codes for type, number, location, operation and maintenance of fixtures and facilities. Provide toilet tissue, paper towels, paper cups and similar disposable materials as appropriate for each facility, and provide covered waste containers for used materials.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUBSECTION 3.3.B

B. **SELF-CONTAINED TOILET UNITS:**

1. The GC Contractor shall provide temporary single-occupant toilet units of the chemical, aerated re-circulation, or combustion type for use by all construction personnel. Units shall be properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material. Quantity of toilet units shall comply with the latest OSHA regulations.
2. **Toilets:** Install separate self-contained toilet units for male and female personnel. Shield toilets to ensure privacy.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUBSECTION 3.3.C

C. **EXISTING TOILETS:**

1. **TOILET FACILITIES:** When approved by the Commissioner, the GC Contractor shall arrange for the use of existing toilet facilities by all personnel during the execution of the work. The Contractor shall be responsible to clean and maintain facilities in a condition acceptable to the Resident Engineer and, at completion of construction, to restore facilities to their condition at the time of initial use.
2. **MAINTENANCE** - The GC Contractor shall maintain the temporary toilet facilities in a clean and sanitary manner and make all necessary repairs.
3. **NUISANCES** - The Contractors shall not cause any sanitary nuisance to be committed by its employees in or about the work, and shall enforce all sanitary regulations of the City and State Health Authorities.

3.4 **TEMPORARY ELECTRIC POWER, TEMPORARY LIGHTING SYSTEM, AND SITE SECURITY LIGHTING:**

- A. **SCOPE:** This Section sets forth the General Conditions and procedures relating to Temporary Electric Power, Temporary Lighting System and Site Security Lighting during the construction period, and is applicable to, and binding on, all Contracts insofar as they are affected.
- B. **TEMPORARY ELECTRIC POWER:**
The Electrical Contractor shall provide and maintain Temporary Electric Power service and distribution system of sufficient size, capacity and power characteristics required for construction



operations for all Contracts, including but not limited to power for Temporary Lighting System, Site Security Lighting, construction equipment, hoists and temporary elevators and all field offices. Temporary Electric Power shall be provided as follows:

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4 B (1)

1. CONNECTION TO UTILITY LINES:

- a. Temporary Electric Power Service for use during construction shall be provided as follows: The Electrical Contractor shall make all necessary arrangements with the Public Utility Company and pay all charges for the Temporary Electric Power system. The Electrical Contractor shall include in its total Contract Price any charges for Temporary Electric Power, including charges that may be made by the Public Utility Company for extending its electrical facilities, and for making final connections. The Electrical Contractor shall make payment directly to the Public Utility Company.
- b. APPLICATIONS FOR METER: The Electrical Contractor shall make application to the Public Utility Company and sign all documents necessary for, and pay all charges incidental to, the installation of a watt hour meter or meters for Temporary Electric Power. The Electrical Contractor shall pay to the Public Utility Company, all bills for Temporary Electric energy used throughout the work, as they become due.
- c. SERVICE AND METERING EQUIPMENT - The Electrical Contractor shall furnish and install, at a suitable location on the site, approved service and metering equipment for the Temporary Electric Power System, ready for the installation of the Public Utility Company's metering devices. The temporary service mains to and from the metering location shall be not less than 100 Amperes, 3-phase, 4-wire and shall be of sufficient capacity to take care of all demands for all construction operations and shall meet all requirements of the NYCEC.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4 B (2)

2. CONNECTION TO EXISTING ELECTRICAL POWER SERVICE:

- a. When approved by the Commissioner, electrical power service for the Temporary Lighting System and for the operation of small tools and equipment less than 1/4 horsepower may be taken from the existing electric distribution system if the existing system is of adequate capacity for the temporary power load. The Electrical Contractor shall cooperate and coordinate with the facility custodian, so as not to interfere with the normal operation of the facility.
- b. There will be no charge for the electrical energy consumed.
- c. The Electrical Contractor shall provide, maintain and pay all costs for separate temporary electric power for any temporary power for equipment larger than 1/4 horsepower. When directed by the Commissioner, the Electrical Contractor shall remove its own temporary power system.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4 B (3)

3. ELECTRICAL GENERATOR POWER SERVICE:

- a. When connection to Utility Lines or existing facility electric service is not available or is not adequate to supply the electric power need for construction operations, the



Electrical Contractor shall provide self-contained generators to provide power beyond that available.

- b. Pay for all energy consumed in the progress of the Work, exclusive of that available from the existing facility or Utility Company.
- c. Provide for control of noise from the generators.
- d. Comply with the Ultra Low Sulfur Fuel in Non-Road Vehicles requirements as set forth in Article 5.4 of the Contract.

C. USE OF COMPLETED PORTIONS OF THE ELECTRICAL WORK:

1. USE OF MAIN DISTRIBUTION PANEL: As soon as the permanent electric service feeders and equipment, metering equipment and main distribution panel are installed and ready for operation, the Electrical Contractor shall have the temporary lighting and power system changed over from the temporary service points to the main distribution panel.
2. COST OF CHANGE OVER - The Electrical Contractor shall be responsible for all costs due to this change over of service and it shall also make application to the Public Utility Company for a watt hour meter to be set on the permanent meter equipment.
3. The requirements for temporary electric power service specified herein shall be adhered to after change over of service until final acceptance of the project.
4. NO EXTRA COST - The operation of the service and switchboard equipment shall be under the supervision of the Electrical Contractor, but this shall in no way be interpreted to mean the acceptance of such part of the installation or relieve the Contractor from its responsibility for the complete work or any part thereof. There shall be no additional charge for supervision by the Electrical Contractor.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB SECTION 04.6

D. TEMPORARY LIGHTING SYSTEM:

1. The Electrical Contractor shall provide adequate service for the temporary lighting system, or a minimum of 100 Amperes, 3-phase, 4-wire service for the temporary lighting system, whichever is greater, and make all necessary arrangements with the Public Utility Company and pay all charges by them for the Temporary Lighting system
2. The Electrical Contractor shall furnish and connect to the metered service point, a Temporary Lighting System to illuminate the entire area where work is being performed and points adjacent to the work, with separately fused circuits for stairways and bridges. Control switches for stairway circuits shall be located near entrance on ground floor.
3. ITEMS: The Temporary Lighting System provided by the Electrical Contractor shall consist of wiring, fixtures, left-hand double sockets, (one (1) double socket for every 400 square feet, with one (1) lamp and one (1) three-prong outlet) lamps, fuses, locked type guards, pigtails and any other incidental material. Additional details may be outlined in the detailed Specifications for the Electrical Work. Changes may be made, provided the full equivalent of those requirements is maintained.
4. The Temporary Lighting System shall be progressively installed as required for the advancement of the work under the various Contracts.
5. RELOCATION: Each Contractor requiring the relocation or extension of the original Temporary Lighting System that is not required due to the normal advancement of the work, as determined by the Resident Engineer, shall bear all costs thereof.
6. PIGTAILS: shall be furnished with left-hand sockets with locked type guards and 40 feet of rubber covered cable. The Electrical Contractor shall furnish and distribute a minimum of three (3) complete pigtails to each Contractor. See the detailed Electrical Specifications for possible additional pigtail required.



7. **LAMPS:** The Electrical Contractor shall furnish and install one (1) complete set of lamps, including those for the trailers. Broken and burned out lamps in the general lighting system shall be replaced by the Electrical Contractor while those in the trailers shall be replaced by each Contractor using such equipment. All lamps shall be compact fluorescent.
8. **CIRCUIT PROTECTION:** The Electrical Contractor shall furnish and install GFI protection for the Temporary Lighting and Site Security Lighting Systems.
9. **ENERGIZING:** The Electrical Contractor shall keep the Temporary Lighting System energized from a period of time, 15 minutes before the established starting time of that trade, which starts work earliest in the morning to 15 minutes after the established quitting time of that trade which stops work latest in the evening. This applies to every day in the week which is established as a regular working day for any trade involved in the construction of this facility and holds until Substantial Completion and Final Acceptance of the work of the Electrical Contractor or until the services are terminated by instructions from the Commissioner.
10. **MAINTENANCE OF TEMPORARY LIGHTING SYSTEM:**
 - a. The Electrical Contractor shall maintain the Temporary Lighting System in good working order during the scheduled hours established.
 - b. The Electrical Contractor shall include in its total Contract Price all costs in connection with the Temporary Lighting System, including all costs for installation, maintenance and electric power.
11. **ADJUSTMENT IN CONTRACT PRICE FOR TEMPORARY LIGHTING MAINTENANCE:** In the event that the temporary lighting maintenance extends beyond the Contract time through no fault of the Electrical Contractor, as determined by the Commissioner, the additional maintenance cost will be in accordance with the requirements of the following paragraphs:
 - a. Payment for maintaining Temporary facilities when required will be made at the average hourly wage for electricians plus 69% of this rate, for each hour of work done upon order of the Resident Engineer. Payments will be included in partial estimates upon submission of detailed vouchers stating date, hour and time expended for each item of work.
 - b. The addition of 69% of the average hourly wage rate specified above shall be deemed as the total allowance for all profit and overhead and for any and all other costs and expenses of any nature whatsoever, including but not limited to allowance for insurance, workman's compensation, unemployment insurance and other supplementary benefits.
12. **REMOVAL OF TEMPORARY LIGHTING SYSTEM:** The temporary lighting system shall be removed by the Electrical Contractor when authorized by the Commissioner.
13. **HAND TOOLS:** The temporary lighting system shall not be used for power purposes, except that light hand tools not larger than 1/4 horsepower may be operated from such system by each Contractor and its subcontractors.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4 E

- E. SITE SECURITY LIGHTING (FOR NEW CONSTRUCTION ONLY):**
1. The Electrical Contractor shall furnish, install and maintain a system of site security lighting, as herein specified, to illuminate the construction site of the project, and it shall be connected to and energized from the Temporary Lighting System. All costs in connection with site security lighting shall be deemed included in the total Contract Price.
 2. It is essential that the site security lighting system be completely installed and operating, at the earliest possible date. All Contractors must cooperate, coordinate and exert every effort to accomplish an early complete installation of the site security lighting system. After



- the system is installed and in operation, if a part of the system interferes with the work of any Contractor, that Contractor shall be completely responsible for the expense of removing, relocating and replacing all equipment necessary to reinstate the system to proper operating conditions.
3. The system shall consist of flood lighting by pole mounted guarded sealed-beam units. Floodlight units shall be mounted 16 feet above grade. Floodlights shall be spaced around the perimeter of the site to produce an illumination level of no less than one (1) foot candle around the perimeter of the site, as well as in any potentially hazardous area or any other area within the site that might be deemed by the Resident Engineer to require security illumination. The system shall be installed in a manner acceptable to the Resident Engineer. The first lighting unit in each circuit shall be provided with a photoelectric cell for automatic control. The photoelectric cell shall be installed as per manufacturer's recommendations.
 4. All necessary poles shall be furnished and installed by the Electrical Contractor.
 5. The site security lighting shall be kept illuminated at all times during the hours of darkness. The Electrical Contractor, at its own expense, shall keep the system in operation, and shall furnish and install all material necessary to replace all damaged or burned out parts.
 6. The Electrical Contractor shall be on telephone call alert for maintaining the system during the operating period stated above.
 7. All materials and equipment furnished under this section shall remain the property of the Electrical Contractor and shall be removed and disposed of by the Electrical Contractor upon completion of that phase of the project.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB SECTION 3.5

3.5

TEMPORARY HEAT:

A. GENERAL:

1. Definition: The provision of Temporary Heat shall mean the provision of heat in order to permit construction to be performed in accordance with the Progress Schedule during all seasons of the year and to protect the work from the harmful effects of low temperature. In the event the building, or any portion thereof, is occupied during construction, the provision of Temporary Heat shall include the provision of heat to permit normal operations in such occupied areas.
 - a. The provision of Temporary Heat shall be in accordance with the temperature requirements set forth in Sub-Section 3.5C herein.
 - b. The provision of Temporary Heat shall include the provision of: 1) all fuel necessary and required, 2) all equipment necessary and required, and 3) all operating labor necessary and required. Operating labor shall mean that minimum force required for the safe day to day operation of the system for the provision of Temporary Heat and shall include, without limitation, heating maintenance labor and/or Fire Watch as required by NYC Fire Department regulations. Operating labor may be required seven (7) days per week and during other than normal working hours, for the period of time required by seasonal weather conditions.
 - c. In the event the building, or any portion thereof, is occupied and the Project involves the replacement, modification and/or shut down of the permanent heating system, or any key component thereof; and such system is a combined system which furnishes domestic hot water for the building occupants, the provision of Temporary Heat shall include the provision of domestic hot water at the same temperature as the system which is being replaced. Domestic hot water shall be provided in accordance with the phasing requirements set forth in the Contract Documents.



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2. Responsibility: The Contractor responsible for the provision of Temporary Heat, including all expenses in connection therewith, shall be as set forth below:
 - a. Projects Involving Enclosure of the Building:
 - 1) Prior to Enclosure - Until the Commissioner determines that the building has been enclosed, as set forth in Sub-Section 3.5B, each Contractor shall be responsible for the provision of its own Temporary Heat.
 - 2) Post Enclosure - Once the Commissioner determines that the building, or any portion thereof, has been enclosed, as set forth in Sub-Section 3.5B, the HVAC Contractor shall be responsible for the provision of Temporary Heat by one or more of the following means: 1) by an existing heating system (if any), 2) by a permanent heating system which is being installed as part of the Project, or 3) by a temporary heating system(s).
 - 3) The HVAC Contractor shall, within two (2) weeks of the kick-off meeting, submit to DDC for review its proposed plan to provide Temporary Heat. Such plan is subject to approval by the Resident Engineer. The HVAC Contractor shall provide Temporary Heat in accordance with the approved plan until written acceptance by the Commissioner of the work of all Contractors, including punch list work, unless directed otherwise in writing by the Commissioner. The responsibility of the HVAC Contractor provided for herein is subject to the exception set forth in Sub-Section 3.5A.2(b) herein.
 - b. Projects not involving Enclosure of the Building:
 - 1) If the Project involves the installation of a new permanent heating system if one did not exist previously, or the replacement, modification and/or shut down of the existing permanent heating system, or any key component thereof, the HVAC Contractor shall be responsible for the provision of Temporary Heat, except as otherwise provided in Sub-Section 3.5H.3(b).2 herein.
 - 2) If the Project does not involve the installation of a new permanent heating system if one did not exist previously, or the replacement, modification and/or shut down of the existing permanent heating system, or any key component thereof; there is no Contractor responsibility of the provision of Temporary Heat, unless otherwise specified in the Contract Documents. However, if the Commissioner, pursuant to Sub-Section 3.5 H.3(b).1 herein, determines that the provision of Temporary Heat is necessary due to special and/or unforeseen circumstances, the HVAC Contractor shall be responsible for the provision of Temporary Heat and such Contractor shall be paid for the same in accordance with Sub-Section 3.5 H.3(b).1 herein.
- B. ENCLOSURE OF STRUCTURES:**
1. Notification: The GC Contractor shall notify all other Contractors and the Resident Engineer at least 30 days prior to the anticipated date that the building(s) will be enclosed.
 2. Commissioner Determination: The Commissioner shall determine whether the building, or any portion thereof, has been enclosed. As indicated in Sub-Section 3.5A.2 above, once the building has been enclosed, the HVAC Contractor shall be responsible for the provision of Temporary Heat. The Commissioner's determination with respect to building enclosure shall be based upon all relevant facts and circumstances, including without limitation, 1) whether the building meets the criteria set forth in Paragraph 3 below, and 2) whether the openings in the building, such as doorways and windows, have been sufficiently covered so as to provide reasonable heat retention and protection from the elements
 3. Criteria for enclosure:
 - a. Roof Area:
 - 1) A building shall be considered to be roofed when the area to be roofed is covered by a permanent structure and all openings through the permanent



structure are covered and protected by temporary covers in Paragraph (c) below.

- 2) Intermediate floor structures of multi-floor buildings shall be considered to be roofed subject to the same requirements of the building roof.
- 3) The final roofing system need not be in place for the building or structure to be determined to be enclosed; provided, however, all openings through the permanent structure covering the roof must be covered and protected by temporary covers, as described in Paragraph (c) below.
- b. Walls: For the walls to be determined to be enclosed permanent exterior wall elements or facing material must be in place and all openings must be covered and protected by temporary covers, as described in Paragraph (c) below.
- c. Temporary Covers: In order to be acceptable, temporary covers must be securely fixed to prevent the entrance of rain, snow and direct wind. The minimum material requirements for temporary covers are as follows: 1) minimum 10 mil. plastic 2) minimum 12 ounce waterproof canvas tarpaulins, or 3) a minimum three-eighths (3/8)inch thickness exterior grade plywood.
- d. Temporary covers for openings shall be the responsibility of the GC Contractor and such work shall be deemed included in the Contract price.

C. TEMPERATURE REQUIREMENTS:

- 1. Unoccupied Buildings: The temperature requirement for the provision of Temporary Heat in unoccupied buildings shall be the GREATER of the following: 1) 50 degrees Fahrenheit, or 2) the temperature requirement for the particular type of work set forth in the Contract Documents.
- 2. Occupied Buildings: The temperature requirement for the provision of Temporary Heat in occupied buildings, or portions thereof, shall be the GREATER of the following: 68 degrees Fahrenheit or the temperature requirement for the particular type of work set forth in the Contract Documents.

D. DURATION:

- 1. The HVAC Contractor shall be required to provide Temporary Heat until the date on which it completes all required work at the site, including all punch list work, as certified in writing by the Resident Engineer, or earlier if so directed in writing by the Commissioner. The HVAC Contractor shall be responsible for the provision of Temporary Heat for the time specified herein, regardless of any delays in completion of the Project, including delays that result in the commencement of the provision of Temporary Heat during a season that is later than that which may have been originally anticipated. The HVAC Contractor shall include in its Total Contract Price all expenses in connection with the provision of Temporary Heat in accordance with the requirements specified herein.
- 2. The total Contract duration is set forth in consecutive calendar days in Schedule A of the Addendum. The Table set forth below indicates the number of full heating seasons that are deemed included in various contract durations, which are specified in consecutive calendar days (ccd)s. At a minimum, a full heating season shall extend from October 15th to April 15th.

Contract Duration	Full Heating Seasons Required
up to 360 ccds	1 full heating season
360 to 720 ccds	2 full heating seasons
more than 720 ccds	3 full heating seasons

E. METHOD OF TEMPORARY HEAT:



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1. The method of temporary heat shall be in conformance with the New York City Fire Code and with all applicable laws, rules and regulations. Prior to implementation, such method shall be subject to the written approval of the Commissioner.
2. The method of temporary heat shall:
 - a. Not cause the deposition of dirt or smudges upon any finished work or cause any defacement or discoloration to the finished work.
 - b. Not be injurious or harmful to people or materials.
 - c. Portable fueled heating devices or equipment SHALL NOT BE ALLOWED for use as temporary heat other than construction-related curing or drying in conformance with the NYC Fire Code.
3. No open fires will be permitted.

F. TEMPORARY HEATING SYSTEM:

1. The temporary system for the provision of Temporary Heat provided by the HVAC Contractor following enclosure of the building shall be complete including, subject to provisions of paragraph E above, boilers pumps, radiators, space heaters, water and heating piping, insulation and controls. The temporary system for the provision of Temporary Heat shall be capable of maintaining the minimum temperature requirements set forth in Paragraph C above.

G. COORDINATION:

1. The GC Contractor shall coordinate with the HVAC Contractor in the work of providing Temporary Heat, and shall so coordinate its operations as to insure sufficient and timely performance of the work under all Contracts. The GC Contractor shall supply and pay for all water required and used in the building for the operation of the heating system(s) for the purpose of Temporary Heat. The GC Contractor shall include all expenses in connection with the supply of water for Temporary Heat in its Total Contract Price. During the period in which Temporary Heat in an enclosed building is being furnished and maintained by the HVAC Contractor, the GC Contractor shall provide proper ventilating and drying, open and close the windows and other openings when necessary for the proper execution of the work and also when directed by DDC. The GC Contractor shall maintain all permanent or temporary enclosures at its own expense.

H. USE OF PERMANENT HEATING SYSTEMS:

1. Use of Permanent Heating System for Temporary Heat after Building Enclosure
 - a. The HVAC Contractor shall provide all labor and materials to promptly furnish and set all required equipment and convectors and/or radiators, piping, valves, fitting, etc., in ample time for their use for the provision of Temporary Heat after enclosure of the building.
 - b. New portions of the permanent heating system that are used for furnishing Temporary Heat shall be left in near perfect condition when delivered to the City for operation. Any repairs required, other than for ordinary wear and tear on the equipment, shall be made by the HVAC Contractor at his/ her expense. The starting date for the warranty or guarantee period for such equipment shall be the date of Substantial Completion acceptance.
 - c. In the event that the HVAC Contractor does not advance the installation of the permanent heating system in sufficient time to permit its use for Temporary Heat as determined by DDC, the HVAC Contractor shall furnish and install a separate system for the provision of Temporary Heat as required to maintain the minimum temperature requirements set forth in Paragraph C above.
2. All equipment for the system for the provision of Temporary Heat shall be placed so as to comply with the requirements specified hereinbefore, and shall be connected, disconnected



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and suitably supported and located so as to permit construction work, including finish work such as wall plastering and painting, to proceed. The installation of the system for the provision of Temporary Heat by the HVAC Contractor including the placing of ancillary system equipment, shall be coordinated with the operations of all Contractors so as to insure sufficient and timely performance of the work of all Contractors. Once the permanent heating system is operating properly, the HVAC Contractor shall remove all portions of the system for Temporary Heat which are not part of the permanent heating system.

3. Temporary Heat Allowance for Special Conditions or and/or Unforeseen Circumstances.
 - a. The City may establish an allowance in the HVAC Contract for payment of costs and expenses in connection with the provision of Temporary Heat as set forth herein. If established, the City will include an amount for such allowance on the Bid Form, and the Contractor shall include such allowance amount in its Total Contract Price. The HVAC Contractor shall only be entitled to payment from this allowance under the conditions and in accordance with the requirements set forth below. In the event this allowance or any portion thereof remains unexpended at the conclusion of the Contract, such allowance shall remain the sole property of the City. Should the amount of the allowance be insufficient to provide payment for the expenses specified below, the City will increase the amount of the allowance.
 - b. The allowance set forth herein may be utilized only under the conditions set forth below.
 1. In the event the Project does not involve the installation of a new permanent heating system if one did not exist previously, or the replacement, modification and/or shut down of the existing permanent heating system, or any key component thereof, and the Commissioner determines that the provision of Temporary Heat is necessary due to special and/or unforeseen circumstances, the HVAC Contractor shall be responsible for the provision of Temporary Heat, as directed by the Commissioner. The City shall pay such Contractor for all costs for labor, material, and equipment necessary and required for the same. Payment shall be made in accordance with Article 26 of the Contract, except that the cost of fuel shall be as set forth in Paragraph (c) below.
 2. In the event that after enclosure of the building, the Commissioner determines that (i) Contractors other than the HVAC Contractor have not sufficiently advanced the work of their contracts that is necessary and required to permit the HVAC Contractor to use the permanent or other heating equipment for the provision of Temporary Heat, and (ii) the HVAC Contractor does not bear any responsibility for such other Contractors' failure to advance the work, the City shall pay the HVAC Contractor for all differential costs for labor, material, and equipment necessary and required for the provision of a substitute system(s) for the provision of Temporary Heat or portions thereof in lieu of the permanent or other systems intended for Temporary Heat. Payment shall be made in accordance with Article 26 of the Contract, except that the cost of fuel shall be as set forth in Paragraph (c) below.
 3. In the event the Commissioner determines that there is a need for maintenance of the permanent heating system by the HVAC Contractor after written acceptance by the Commissioner of the work of all Contractors, and that the need for such maintenance is not the fault of the HVAC Contractor, the HVAC Contractor shall provide the required maintenance of the permanent heating system for the period of time directed by the Commissioner. The City shall pay the HVAC Contractor for the cost of direct labor and fuel necessary and required in connection with such maintenance, excluding the cost of any foremen or other supervision. Payment shall be made in accordance with Article 26 of the Contract, except that the cost of fuel shall be as set forth in Paragraph (c) below.



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- c. Payment for Fuel Costs - Payment from the allowance set forth herein for the cost of fuel necessary and required to operate the system for the provision of Temporary Heat or to maintain the permanent heating system under the conditions set forth in Paragraph b above shall be limited to the direct cost of such fuel. The HVAC Contractor shall not be entitled to any overhead and/or profit for such fuel costs. In order to receive payment for such fuel costs, the HVAC Contractor must present original invoices for the same. DDC reserves the right to furnish the required fuel.
- d. Deduction - In the event that any amount of the allowance set forth herein is expended for payment to the HVAC Contractor under the circumstances set forth in Paragraph b.(2) above, the Commissioner shall deduct and retain such amount out of moneys that are due and owing hereunder to the other Contractor(s) responsible for the failure to advance the work, as determined by the Commissioner. In the event the amount expended from the allowance exceeds the total sum due and owing to such other Contractor(s), such excess shall be paid to the City by such other Contractor(s) immediately upon demand.

I. RELATED ELECTRICAL WORK:

1. The Electrical Contractor shall be responsible for providing the items set forth below and shall include all expenses in connection with such items in its Total Contract Price. The Electrical Contractor shall provide such items promptly when required and shall in all respects coordinate its work with the GC Contractor and the HVAC Contractor in order to facilitate the provision of Temporary Heat by the HVAC Contractor.
 - a. The Electrical Contractor shall provide all labor, materials, equipment and power necessary and required to furnish and maintain any temporary or permanent electrical connections to all equipment specified to be connected as part of the work of his Contract.
 - b. The Electrical Contractor shall supply and pay for all power necessary and required for the operation of the system for the provision of Temporary Heat and/or the permanent heating system used for Temporary Heat by the HVAC Contractor. Such power shall be provided by the Electrical Contractor for the duration the HVAC Contractor is required to provide Temporary Heat, as set forth in Paragraph D above.
2. In providing the items set forth in Paragraph 1 above, the Electrical Contractor is advised that labor may be required seven (7) days a week and/or during other than normal working hours for the period of time required by seasonal weather conditions.

J. RELATED PLUMBING WORK:

1. The Plumbing Contractor shall be responsible for providing all labor, materials and equipment necessary and required to furnish and maintain all temporary or permanent connections to all equipment or plumbing outlets specified to be provided as part of the work of its Contract. The Plumbing Contractor shall include all expenses in connection with such items of work in its Total Contract Price. The Plumbing Contractor shall provide such items of work promptly when required and shall in all respects coordinate its work with the GC Contractor and the HVAC Contractor in order to facilitate the provision of Temporary Heat by the HVAC Contractor.
2. In the event portions of the permanent plumbing equipment furnished by the Plumbing Contractor as part of the work of his Contract are used for the provision of Temporary Heat by the HVAC Contractor, either during construction or prior to acceptance by the City of the complete plumbing system, the Plumbing Contractor shall be responsible to provide such plumbing equipment to the City in near perfect condition and shall make any repairs required, other than for ordinary wear and tear on the equipment, at its expense. The starting date for warranty and/or guarantee period for such plumbing equipment shall be the date of Substantial Completion acceptance by the City.



3. For Projects requiring the installation of new and/or modified gas service, as well as associated meter installations, the Plumbing Contractor shall promptly perform all required filings and coordination with the Utility Companies in order to expedite the installation, testing, and approval of the gas service and associated meter(s).

3.6 STORM WATER CONTROL, DEWATERING FACILITIES AND DRAINS:

A. PUMPING:

1. Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of storm water from heavy rainfall.
2. The GC Contractor shall furnish and install all necessary automatically operated pumps of adequate capacity with all required piping to run-off agencies, so as to maintain the excavation, cellar floor, pits and exterior depressions and excavations free from accumulated water during the entire period of construction and up to the date of final acceptance of work of the Contract.
3. All pumps shall be maintained at all times in proper working order.
4. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
5. Remove snow and ice as required to minimize accumulations.

3.7 TEMPORARY FIELD OFFICE FOR CONTRACTOR:

- A. Each Contractor shall establish a temporary field office for its own use at the site during the period of construction, at which readily accessible copies of all Contract Documents shall be kept.
- B. The field office shall be located where it will not interfere with the progress of any part of the work or with visibility of traffic control devices.
- C. **CONTRACTOR'S REPRESENTATIVE:** In charge of each office there shall be a responsible and competent representative of the Contractor, duly authorized to receive orders and directions and to put them into effect.
- D. Arrangements shall be made by each Contractor whereby its representative may be readily accessible by telephone.
- E. All temporary structures shall be of substantial construction and neat appearance, and shall be painted a uniform gray unless otherwise directed by the Commissioner.
- F. **CONTRACTOR'S SIGN -** Each Contractor shall post and keep posted, on the outside of its field office, office or exterior fence or wall at site of work, a legible sign giving full name of the company, address of the company and telephone number(s) of responsible representative(s) of the firm who can be reached in event of an emergency at any time.
- G. **ADVERTISING PRIVILEGES -** The City reserves the right to all advertising privileges. The Contractor shall not cause any signs of any kind to be displayed at the site unless specifically required herein or authorized by the Commissioner.

3.8 DDC FIELD OFFICE:

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.8/A

A. OFFICE SPACE IN EXISTING BUILDING:

1. The Resident Engineer will arrange for office space for sole use in the building where work is in progress. The GC Contractor shall provide and install a lockset for the door to secure the equipment in the room. The GC Contractor shall provide two (2) keys to the Resident Engineer. After completion of the project the GC Contractor shall replace the original lockset on the door and ensure its proper operation.



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2. In addition to equipment specified in Sub-Section 3.8 (D) the GC Contractor shall provide, for exclusive use of the DDC Field Office, the following:
 - a. Two (2) single pedestal desks, 42" x 32"; two (2) swivel chairs with arms and three (3) side chairs without arms to match desk. Two metal (2) lockers, single units, 15" x 18" x 78" overall including 6" legs. Lockers to have flat key locks with two (2) keys each, General Steel products or approved equal. Two (2) full ball bearing suspension four (4) drawer vertical legal filing cabinets with locks, approximately 52"H x 28 1/2"D x 18"W.
 - b. One (1) 9000 B.T.U air conditioner or as directed by Commissioner. Wiring for the air conditioner shall be minimum No. 12 AWG fed from individual circuits in the fuse box.
 - c. One (1) folding conference table, 96" x 30" and ten (10) folding chairs.
 - d. Two (2) metal wastebaskets.
 - e. One (1) fire extinguisher, one (1) quart vaporizing liquid type, brass, wall mounted by Pyrene No. C21 or approved equal.
 - f. One (1) Crystal Springs water cooler with bottled water, Model No. LP14058 or approved equal to be furnished for the duration of the project as required.
3. The GC Contractor shall provide one (1) telephone, where directed and shall pay all costs for telephone service for calls within the New York City limits for the duration of the project.
4. All furniture and equipment, except computer equipment specified in Sub-Section 3.8 D.3, shall remain the property of the GC Contractor..

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.8.B

B. DDC FIELD OFFICE TRAILER:

1. **GENERAL:** The GC Contractor shall, for the time frame specified herein, provide and maintain at it's own cost and expense a DDC Construction Field Office and all related items as specified herein [hereinafter collectively referred to as the "DDC Field Office"] for the exclusive use of the Resident Engineer. The DDC Field Office shall be located at the Project site and shall be solely dedicated to the Project. Provision of the DDC Field Office shall commence within THIRTY (30) days from Notice to Proceed and shall continue through forty-five (45) days after Substantial Completion of the required construction at the Project site. The Contractor shall remove the DDC Field Office forty-five (45) days after Substantial Completion of the required construction, or as otherwise directed in writing by the Commissioner.
2. **TRAILER:** The GC Contractor shall provide at its own cost and expense a mobile office trailer for use as the DDC Field Office. The Plumbing and Electrical Contractors shall install and connect all utility services to the trailer within thirty (30) days from Notice to Proceed. The trailer shall have equipment with the minimum requirements hereinafter specified. Any permit and fees required for the installation and use of said trailer shall be borne by the GC Contractor. The trailer including furniture and equipment therein, except computer equipment specified in Sub-Section 3.8D.3 herein, shall remain the property of the GC Contractor.
3. Trailer shall be an office type trailer of the size specified herein, with exterior stairs at entrance. Trailer construction shall be minimum 2 x 4 wall construction fully insulated with paneled interior walls, pre-finished gypsum board ceilings and vinyl tile floors.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.8.B.3a or SUB-SECTION 3.8.B.3b.



- a. DDC Managed Project Trailer: DDC Field Office Trailer Size, Layout and Computer Workstation:
- 1) Overall length: 32 Feet
Overall width: 10 Feet
 - 2) Interior Layout:
Provide one (1) general office/conference room area and one (1) private office at one end of the trailer. Provide equipment and amenities as specified in Sub-Section 3.8.B herein.
 - 3) Computer Workstation: Provide one (1) complete computer workstation, as specified in Sub-Section 3.8.D herein, in the private office area as directed by the Resident Engineer.
- b. CM Managed Project Trailer: DDC Field Office Trailer Size, Layout and Computer Workstation:
- 1) Overall length: 50 Feet
Overall width: 10 Feet
 - 2) Interior Layout:
Provide one (1) large general office/conference room in the center of the trailer and two (2) private offices, one (1) each at either end of the trailer. Provide equipment and amenities as specified in Sub-Section 3.8.B herein.
 - 3) Computer Workstation:
Provide three (3) complete computer workstations as specified in Sub-Section 3.8D herein. Provide one (1) each complete computer workstation in each private office and one (1) complete computer workstation at the secretarial position as directed by the Resident Engineer.
4. The exterior of the trailer shall be lettered with black block lettering of the following heights with white borders:
- | | |
|---------------------------------------|--------|
| CITY OF NEW YORK | 2-1/2" |
| DEPARTMENT OF DESIGN AND CONSTRUCTION | 3-3/4" |
| DIVISION OF PUBLIC BUILDINGS | 3-1/2" |
| DDC FIELD OFFICE | 2-1/2" |
- NOTE: In lieu of painting letters on trailer the GC Contractor may substitute a sign constructed of a good quality weatherproof material with the same type and size of lettering above.
5. All windows and doors shall have aluminum insect screens. Provide wire mesh protective guards at all windows.
 6. The interior shall be divided by partitions into general and private office areas as specified herein. Provide a washroom located adjacent to the private office and a built-in wardrobe closet opposite the washroom. Provide a built-in desk in the private office(s) with fixed overhead shelf and clearance below for two (2) file cabinets.
 7. Provide a built-in drafting or reference table, located in the general office/conference room, at least 60 inches long by 36 inches wide with cabinet below and wall type plan rack at least 42 inches wide.
 8. The washroom shall be equipped with a flush toilet, wash basin with two (2) faucets, medicine cabinet, complete with supplies and a toilet roll tissue holder. Plumbing and fixtures shall be approved house type, with each appliance trapped and vented and a single discharge connection. Five (5) gallon capacity automatic electric heater for domestic hot water shall be furnished.
 9. HVAC: The trailer shall be equipped with central heating and cooling adequate to maintain a temperature of 72 degrees during the heating season and 75 degrees during the cooling season when the outside temperature is 5 degrees F. winter and 89 degrees F. summer.



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10. Lighting shall be provided via ceiling mounted fluorescent lighting fixtures to a minimum level of 50 foot candles in the open and private office(s) along with sufficient lighting in the washroom. Broken and burned out lamps shall be replaced by the Electrical Contractor. A minimum of four (4) duplex convenience outlets shall be provided in the open office and two (2) each in the private office(s). These outlets shall be in addition to special outlet requirements for computer stations, copiers, HVAC unit, etc.
11. Electrical service switch and panel shall be adequately sized for the entire trailer load. Provide dedicated circuits for HVAC units, hot water heater, copiers and other equipment as required. All wiring and installation shall conform to the New York City Electrical Code.
12. The following movable equipment shall be furnished:
 - a. Two (2) single pedestal desks, 42" x 32"; two (2) swivel chairs with arms and three (3) side chairs without arms to match desk. Two (2) full ball bearing suspension four (4) drawer vertical legal filing cabinets with locks and two (2) full ball bearing two (2) drawer vertical legal filing cabinets in each private office located below built-in desk.
 - b. One (1) folding conference table, 96" x 30" and ten (10) folding chairs.
 - c. Three (3) metal wastebaskets.
 - d. One (1) fire extinguisher one (1) quart vaporizing liquid type, brass, wall mounted by Pyrene No. C21 or approved equal.
 - e. One (1) Crystal Springs water cooler with bottled water, Model No. LP14058 or approved equal to be furnished for the duration of the Contract as required.
13. **TRAILER TEMPORARY SERVICE:** Plumbing and electrical work required for the trailer will be furnished and maintained as below.
 - a. **PLUMBING WORK:** The Plumbing Contractor shall provide temporary water and drainage service connections to the DDC Field Office trailer for a complete installation. Provide all necessary soil, waste, vent and drainage piping.

The Plumbing Contractor shall frost-proof all water pipes to prevent freezing.

 - 1) **REPAIRS, MAINTENANCE:** The Plumbing Contractor shall provide repairs for the duration of the project until the trailer is removed from the site.
 - 2) **DISPOSITION OF PLUMBING WORK:** At the expiration of the time limit set forth in Sub-Section 3.8.B.1 herein, the temporary water and drainage connections and piping to the DDC Field Office trailer shall be removed by the Plumbing Contractor and shall be plugged at the mains. All piping shall become the property of the Plumbing Contractor and shall be removed from the site, all as directed. All repair work due to these removals shall be the responsibility of the GC Contractor.
 - b. **ELECTRICAL WORK:**
 - 1) The Electrical Contractor shall furnish, install and maintain a temporary electric feeder to the DDC Field Office trailer immediately after it is placed at the job site.
 - 2) The temporary electrical feeder and service switch/fuse shall be adequately sized based on the trailer load and installed per the New York City Electrical Code and complying with utility requirements.
 - 3) The Electrical Contractor shall make all arrangements and pay all costs to provide electric service.
 - 4) The Electrical Contractor shall pay all costs for current consumed and for maintenance of the system in operating condition, including the furnishing of the necessary bulb replacements lamps, etc., for the duration of the project and for a period of forty-five (45) days after the date of Substantial Completion.
 - 5) **Disposition of Electric Work:** At the expiration of the time limit set forth in Sub-Section 3.8.B.1 herein, the temporary feeder, safety switch, etc., shall be removed and disposed of as directed.



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- 6) All repair work due to these removals shall be the responsibility of the GC Contractor.

c. MAINTENANCE

- 1) The GC Contractor shall provide and pay all costs for regular weekly janitor service and furnish toilet paper, sanitary seat covers, cloth towels and soap and maintain the DDC Field Office in first-class condition, including all repairs, until the trailer is removed from the site.
 - 2) Supplies: The GC Contractor shall be responsible for providing (a) all office supplies, including without limitation, pens, pencils, stationery, filtered drinking water and sanitary supplies, and (b) all supplies in connection with required computers and printers, including without limitation, an adequate supply of blank CD's/DVD's, storage boxes for blank CDs/DVDs, and paper and toner cartridges for the printer.
 - 3) Risk of Loss: The entire risk of loss with respect to the DDC Field Office and equipment shall remain solely and completely with the GC Contractor. The Contractor shall be responsible for the cost of any insurance coverage determined by the Contractor to be necessary for the Field Office.
 - 4) At forty-five (45) days after the date of Substantial Completion, or sooner as directed by the Commissioner, the Plumbing and Electrical Contractors shall have all services disconnected and capped to the satisfaction of the Commissioner. All repair work due to these removals shall be the responsibility of the GC Contractor.
- d. TELEPHONE SERVICE: The GC Contractor shall provide and pay all costs for the following telephone services for the DDC Field Office trailer:
- 1) Separate telephone lines for one (1) desk phone in each private office.
 - 2) One (1) wall phone (with six (6) foot extension cord) at plan table.
 - 3) Separate telephone lines for the fax machine and internet access in each private office. Telephone service shall include voice mail.
 - 4) A remote bell located on outside of trailer
 - 5) The telephone service shall continue until the trailer is removed from the site.
- e. PERMITS: The GC Contractor shall make the necessary arrangements and obtain all permits and pay all fees required for this work.

- C. RENTED SPACE: The GC Contractor has the option of providing, at its cost and expense, rented office or store space in lieu of trailer. Said space shall be in the immediate area of the Project and have adequate plumbing, heating and electrical facilities. Space chosen by the GC Contractor must be approved by the Commissioner before the area is rented. All insurance, maintenance and equipment, including computer workstations specified in Sub-Section 3.8 herein, required for the DDC Field Office trailer shall also apply to rented spaces.



REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.8.D

D. ADDITIONAL EQUIPMENT FOR THE DDC FIELD OFFICE:

1. The GC Contractor shall provide a high volume copy machine (50 copies per minute) for paper sizes 8½ x 11, 8½ x 14 & 11 x 17. Copier shall remain at job site until the DDC Field office trailer is removed from the site.
2. The GC Contractor shall furnish a fax machine and a telephone answering machine at commencement of the project for the exclusive use of the DDC Field Office. All materials shall be new, sealed in manufacturer's original packaging and shall have manufacturers' warranties. All items shall remain the property of the City of New York at the completion of the project.
3. **COMPUTER WORKSTATION:** The GC Contractor shall provide one complete computer workstation, in quantities specified in Sub-Section 3.8.B.3, as specified herein:

a. **Hardware/Software Specification:**

- 1) **Computer Equipment** - Computers shall be provided for all contracts that have a Total Consecutive Calendar Days for construction duration as set forth in Schedule "A" of 180 CCD's or greater. Contracts of lesser duration shall not require computers.
- 2) Computers furnished by the GC Contractor for use by City Personnel, for the duration of the contract, shall be in accordance with Specific Requirements, contained herein, shall remain the property of the City of New York at the completion of the project and shall meet the following minimum requirements:
- 3) **Personal Computer(s) – Each Workstation Configuration.**
 - a) **Make and Model:** Dell; HP; Gateway; Acer; or, an approved equivalent. (Note: an approved equivalent requires written approval of the DDC Assistant Commissioner of ITS.)
 - b) **Processor:** i5-2400 (6MB Cache, 3.1GHz) or faster computer - Single Processor.
 - c) **System RAM:** Minimum of 4GB (Gigabytes) Dual Channel DDR3 SDRAM at 1333MHz – 2 DIMMSs
 - d) **Hard Disk Drive(s):** 500 GB (Gigabytes) Serial ATA (7200RPM) w/DataBurst Cache, or larger.
 - e) **CD-RW:** Internal CD-RW, 48x Speed or faster.
 - f) **16xDVD+/-RW DVD** DVD Burner (with double layer write capability) 16x Speed or faster
 - g) **I/O Ports:** Must have at least one (1) Serial Port, one (1) Parallel Port, and three (3) USB Ports.
 - h) **Video Display Card:** HD Graphics (VGA, HDMI) with a minimum of 64 MB of RAM.
 - i) **Monitor:** 22" W, 23.0 Inch VIS, Widescreen, VGA/DVI LCD Monitor.



- j) Available Exp. Slots: System as configured above shall have at least two (2) full size PCI Slots available.
- k) Network Interface: Integrated 10/100/1000 Ethernet Card
- l) Other Peripherals: Optical scroll Mouse, 101 Key Keyboard, Mouse Pad and all necessary cables.
- m) Software Requirement: Microsoft Windows 7 Professional SP1, 32 bit; Microsoft Office Professional 2010 or 2013; Microsoft Project 2010; Adobe Acrobat reader, Anti-Virus software package w/ 2 year updates subscription, and, either Auto Cad LT or Microsoft Visio Standard Edition, as directed by the Resident Engineer.

4) DDC Field Office Specs: DDC Field Offices requiring computers shall be provided with the following:

- a) One 1) broad-band internet service account. Wideband Internet connectivity at a minimum throughput of 15 Mbps download and 5 Mbps upload is required at each field office location with 1-5 staffers. For larger field offices see table below for minimum required upload speeds. Telephone service should be bundled together with Internet connectivity. Because of throughput requirements Verizon FIOS is the preferred connectivity provider where available.

Office Personnel #	Upload Speeds (Minimum)
1 - 5	5 Mbps
6 - 10	10 Mbps
11 - 15	15 Mbps
16 - 20 ...	20 Mbps

This account will be active for the life of the project. The e-mail name for the account shall be the DDC Field Office/project Id (e.g. FLD K HWK666 McGuinness@earthlink.com).

- b) One (1) 600 DPI HP Laser Jet Printer (twelve (12) pages per minute or faster) with one (1) Extra Paper (Legal Size)
 - c) All necessary cabling for equipment specified herein.
 - d) Storage Boxes for Blank CD's
 - e) Printer Table
 - f) UPS/ Surge Suppressor combo
- 5) All computers required for use in the DDC Field Office shall be delivered, installed, and setup in the DDC Field Office by the GC Contractor.
- 6) All Computer Hardware shall come with a three (3) year warranty for on-site repair or replacement. Additionally, and notwithstanding any terms of the warranty to the contrary, the GC Contractor is responsible for rectifying all computer problems or equipment failures within one (1) business day.



- 7) An adequate supply of blank CDs/DVDs, and paper and toner cartridges for the printer shall be provided by the GC Contractor, and shall be replenished by the GC Contractor as required by the Resident Engineer.
- 8) It is the GC Contractor's responsibility to ensure that electrical service and phone connections are also available at all times; that is, the Field Office Computer(s) is to be powered and turned on twenty-four (24) hours each day.
- 9) Broadband connectivity is preferred at each field office location. Please take into consideration that an extra phone line dedicated to the modem must be ordered as part of the contract unless Internet broadband connectivity, via Cable or DSL, is available at the planned field office location. Any questions regarding this policy should be directed to the Assistant Commissioner of Information Technology Services at 718-391-1761.
- 10) Ownership: The equipment specified above shall, unless otherwise directed by the Commissioner, be the sole property of the City of New York upon delivery to the DDC Field Office. The GC Contractor shall prepare and maintain an accurate inventory of all equipment which it purchases for the DDC Field Office. Such inventory shall be provided to the City of New York. Upon completion of the required services, as directed by the Commissioner, the Contractor shall turn such equipment over to the City of New York.

E. HEAD PROTECTION (HARD HATS):

1. The GC Contractor shall provide a minimum of 10 standard protective helmets for the exclusive use of Department of Design and Construction personnel and their visitors. Helmets shall be turned over to the Resident Engineer and kept in the DDC Field Office.
2. Upon completion of the project, the helmets shall become the property of the GC Contractor.

3.9 MATERIAL SHEDS:

- A. Material sheds used by each Contractor for the storage of its materials shall be kept at locations which will not interfere at any time with the progress of any part of the work or with visibility of traffic control devices.
- B. Store combustible materials apart from the facility.

3.10 TEMPORARY ENCLOSURES:

- A. The GC Contractor shall provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weather tight enclosure for building exterior.
- B. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.

3.11 TEMPORARY PARTITIONS:

- A. The GC Contractor shall provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate occupied tenant areas from fumes and noise.
 1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant plywood on construction operations side.
 2. Construct dustproof partitions with 2 layers of 3-mil (0.07-mm) polyethylene sheet on each side. Cover floor with 2 layers of 3-mil (0.07-mm) polyethylene sheet, extending sheets 18 inches (460 mm) up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant plywood.



- a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches (1219 mm) between doors. Maintain water-dampened foot mats in vestibule.
3. Insulate partitions to provide noise protection to occupied areas.
4. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.
5. Protect air-handling equipment.
6. Weather strip openings.
7. Provide walk-off mats at each entrance through temporary partition.

3.12 TEMPORARY FIRE PROTECTION:

- A. The GC Contractor shall install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
- B. Prohibit smoking in all areas.
- C. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
- D. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
- E. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.13

3.13 WORK FENCE ENCLOSURE:

- A. The GC Contractor shall furnish, erect and maintain a wood construction or chain-link fence to the extent shown on the drawings or required by the work enclosing the entire project on all sides. All materials used shall be new. Any permit required for the installation and use of said fence and costs shall be borne by the GC Contractor.
- B. WOOD FENCE shall be 7'-0" high with framing construction of yellow pine, using 4" x 4" approved preservative-treated posts on not more than 6'-0" centers, with three (3) rails of at least 2" x 4" size to which shall be secured minimum 1/2 inch thick exterior grade plywood. Posts shall be firmly fixed in the ground at least 30" and thoroughly braced. Top edge of fence shall be trimmed with a rabbeted edge mould. Provide on the street traffic sides of fence, observation openings as directed.
 1. GATES - Provide an adequate number of double gates, complete with hardware, located as approved by the Resident Engineer. Double gates shall have a total clear opening of 14'-0" with two (2) 7'-0" hinged swinging sections. Hanging posts shall be 6" x 6" and shall extend high enough to receive and be provided with tension or sag rods for the swinging sections.
 2. PAINTING - The fence and gates shall be entirely painted on the street and public sides with one (1) coat of exterior primer and one (1) top coat of exterior grade acrylic-latex emulsion paint. Black stenciled signs reading "POST NO BILLS" shall be painted on fence with three (3) inch high letters on 25 foot spacing for the entire length of fence on street traffic sides. Signs shall be stenciled five (5) feet above the sidewalk.



- C. CHAIN-LINK FENCING shall be minimum 2-inch thick, galvanized steel, chain-link fabric fencing; 8 feet high with galvanized steel pipe posts; minimum 2-3/8-inch OD line posts and 2-7/8-inch OD corner and pull posts, with 1-5/8-inch OD top and bottom rails. Fence shall be accurately aligned and plumb, adequately braced and complete with gates, locks and hardware as required. Under no condition shall fencing be attached or anchored to existing construction or trees.
- D. 1. It shall be the obligation of the GC Contractor to remove all posters, advertising signs, and markings, etc., immediately.
2. Should the fencing be required to be relocated during the course of the Contract, it shall be done by the GC Contractor at no additional cost to the City.
3. Where sidewalks are used for "drive over" purposes for Contractor vehicles, a suitable wood mat or pad shall be provided for protection of sidewalks and curbs.
4. Where required, make provision for fire hydrants, lampposts, etc.
5. REMOVAL - When directed by the Resident Engineer, the fence shall be removed.

3.14 RODENT AND INSECT CONTROL:

- A. DESCRIPTION: The GC Contractor shall provide all labor, materials, plant and equipment, and incidentals required to survey and monitor rodent activity and to control any infestation or outbreak of rodents, rats, mice, water beetles, roaches and fleas within the project area. Special attention should be paid to the following conditions or areas:
- 1 Wet areas within the project area, including all temporary structures.
 - 2 All exterior and interior toilet structures within the project area.
 - 3 All Field Offices and shanties within the project area of all Contractors and DDC.
 - 4 Wherever there is evidence of food waste and/or discarded food or drink containers, in quantity, that would cause breeding of rodents or the insects herein specified.
 - 5 Any other portion of the premises requiring such special attention.
- B. MATERIALS:
1. All materials shall be approved by the New York State Department of Environmental Conservation and comply with the New York City Health Code, OSHA and the laws, ordinances and regulations of State and Federal agencies pertaining to such chemical and/or materials.
- C. PERSONNEL:
1. All pest control personnel must be supervised by an exterminator licensed in categories 7A and 8.
- D. METHODS:
1. Application and dosage of all materials shall be done in strict compliance with the manufacturer's recommendations.
 2. Any unsanitary conditions, such as uncollected garbage or debris, resulting from all Contractors' activities, which will provide food and shelter to the resident rodent population shall be corrected by the GC Contractor immediately after notification of such condition by the Resident Engineer.
- E. RODENT CONTROL WORK:
- 1 In wetlands, woodlands and areas adjacent to a stream, special precautions must be taken to protect water quality and to ensure the safety of other wildlife. To prevent poisoned bait from entering streams, no poisoned bait shall be used in areas within seventy-five (75) feet of all stream banks. Live traps must be used in these seventy-five (75) foot buffer zone areas and within wetland and woodland areas.



- 2 In areas outside the seventy-five (75) foot zone of protection adjacent to streams, and in areas outside wetlands and woodlands, tamper proof bait stations with poisoned bait shall be placed during the period of construction and any consumed or decomposed bait shall be replenished as directed.
- 3 At least one month prior to initiation of the construction work, and periodically thereafter, live traps and/or rodenticide bait in tamper proof bait stations, as directed above, shall be placed at locations that are inaccessible to pets, human beings, children and other non-target species, particularly wildlife (for example-birds) in the project area.
- 4 The GC Contractor shall be responsible for collecting and disposing of all trapped and poisoned rodents found in live traps and tamper proof bait stations. The GC Contractor shall also be responsible for posting and maintaining signs announcing the baiting of each particular location.
The GC Contractor shall be responsible for the immediate collection and disposal of any visible rodent remains found on streets or sidewalks within the project area.
- 5 It is anticipated that public complaints will be addressed to the Commissioner. The GC Contractor, where directed by the Commissioner, shall take appropriate actions, like baiting, trapping, proofing, etc., to remedy the source of complaint within the next six (6) hours of normal working time which is defined herein for the purposes of this section as 7 A.M. to 6 P.M. on Mondays through Saturdays.
- 6 Emergency service during the regular workday hours (Monday through Friday) shall be rendered within 24 hours, if requested by the Commissioner, at no additional cost to the City.

F. EDUCATION & INSTRUCTION:

- 1 The GC Contractor shall post notices on all Construction Bulletin Boards advising workers, employees, and residents to call the Engineer's Field Office to report any infestation or outbreak of rodents, rats, mice, water beetles, roaches and fleas within the project area. The GC Contractor shall provide and distribute literature pertaining to IPM techniques of rodent control to affected businesses and superintendents of nearby residential buildings to ensure their participation in maintaining their establishments free of unsanitary conditions, harborage removal and rodent proofing.
- 2 Prior to application of any chemicals, the GC Contractor shall furnish to the Commissioner copies or sample labels for each pesticide, antidote information, and Material Data Safety Sheets (MSDS) for each chemical used.

G. RECORDS:

1. The GC Contractor shall keep a record of all rodent and waterbug infestation surveys conducted by him/her and make available, upon request, to the Commissioner. The findings of each survey shall include, but not be limited to, recommended Integrated Pest Management (IPM) techniques, like baiting, trapping, proofing, etc., proposed for rodent and waterbug pest control.
2. The GC Contractor shall maintain records of all locations baited along with the type and quantity of rodenticide and insecticide bait used.

3.15 PLANT PEST CONTROL REQUIREMENTS and TREE PROTECTION REQUIREMENTS:

- A. Plant Pest Control Requirements: The GC Contractor and its subcontractors, including the Certified Arborist described below, shall comply with all Federal and New York State laws and regulations concerning Asian Longhorned Beetle (ALB) management, including protocols for ALB eradication and containment promulgated by the New York State Department of Agriculture and Markets (NYSDAM). The GC Contractor is referred to: (1) Part 139 of Title 1 NYCRR, Agriculture



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and Markets Law, Sections 18, 164 and 167, as amended, and (2) State Administrative Procedure Act, Section 202, as amended.

1. All tree work performed within the quarantine areas must be performed by New York State Department of Agriculture and Markets (NYSDAM) certified entities. Transportation of all host material, living, dead, cut or fallen, inclusive of nursery stock, logs, green lumber, stumps, roots, branches and debris of a half inch or more in diameter from the quarantine areas is prohibited unless the GC Contractor or its subcontractor performing tree work has entered into a compliance agreement with NYSDAM. The terms of said compliance agreement shall be strictly complied with. Any host material so removed shall be delivered to a facility approved by NYSDAM. For the purpose of this contract host material shall be ALL species of trees.
 2. Any host material that is infested with the Asian Longhorned Beetle must be immediately reported to NYSDAM for inspection and subsequent removal by either State or City contracts, at no cost to the GC Contractor.
 3. Prior to commencement of tree work, the GC Contractor shall submit to the Commissioner a copy of a valid Asian Longhorned Beetle compliance agreement entered into with NYSDAM and the GC Contractor or its subcontractor performing tree work. If any host material is transported from the quarantine area the GC Contractor shall immediately provide the Commissioner with a copy of the New York State 'Statement of Origin and Disposition' and a copy of the receipt issued by the NYSDAM approved facility to which the host materials are transported.
 4. Quarantine areas, for the purpose of this contract shall be defined as all five boroughs of the City of New York. In addition, prior to the start of any tree work, the GC Contractor shall contact the NYC Department of Parks & Recreation's Director of Landscape Management at (718) 699-6724, to determine the limits of any additional quarantine areas that may be in effect at the time when tree work is to be performed. The quarantine area may be expanded by Federal and State authorities at any time and the GC Contractor is required to abide by any revisions to the quarantine legislation while working on this contract. For further information please contact: NYSDAM (631) 288-1751.
- B. Tree Protection Requirements: The GC Contractor shall retain a Certified Arborist, as defined by New York City Department of Parks and Recreation (NYCDPR) regulations, to provide the services described below.
1. Surveys and Reports: The Certified Arborist shall, at the times indicated below, conduct a survey and prepare a plant material assessment report which includes: (1) identification, by species and pertinent measurements, of all plant material located on the project site, or in proximity to the project site, as described below, including all trees, significant shrubs and/or planting masses; (2) identification and plan for the containment of plant pests and pathogens, including the ALB, as described in paragraph A above; (3) evaluation of the general health and condition of any infected plant material.
 2. Frequency of Reports: The Certified Arborist shall conduct a survey and provide a plant material assessment report at two (2) points in time: (1) prior to the commencement of construction work; and (2) at the time of substantial completion. In addition, for projects exceeding 24 months in duration, the Certified Arborist shall conduct a survey and prepare a report at the midpoint of construction. Copies of each plant material assessment report shall be submitted to the Resident Engineer within two (2) weeks of the survey.



3. Proximity to Project Site: Off-site trees, significant shrubs and/or planting masses shall be considered to be located in proximity to the project site under the circumstances described below.
 - a. The tree trunk, significant shrub, or primary cluster of stems in a planting mass is within 50 (fifty) feet of the project's Contract Limit Lines (CLLs) or Property Lines (PLs).
 - b. Any part of the tree or shrub stands within 50 (fifty) feet of: (a) a path for site access for vehicles and/or construction equipment; or (b) scaffolding to be erected for construction activity, including façade remediation projects.
 - c. The Certified Arborist determines that the critical root zone (CRZ) of an off-site tree, significant shrub, or primary cluster of stems in a planting mass extends into the project site, whether or not that plant material is located within the 50-foot inclusionary perimeter as outlined above.
4. Tree Protection Plan: The Certified Arborist shall prepare, and the GC Contractor shall implement, a Tree Protection Plan, for all trees that may be affected by any construction work, excavation or demolition activities, including without limitation, (1) on-site trees, (2) street trees, as defined below, (3) trees under NYCDPR jurisdiction as determined by the Department of Transportation, and (4) all trees that are located in proximity to the project site, as defined above. The Tree Protection Plan shall comply with the NYC DPR rules, regulations and specifications. The GC Contractor is referred to Chapter 5 of Title 56 of the Official Compilation of the Rules of the City of New York. Copies of the Tree Protection Plan shall be submitted to the Resident Engineer prior to the commencement of construction. Implementation of the Tree Protection Plan for street trees and trees under NYCDPR jurisdiction shall be in addition to any tree protection requirements specified or required for the project site. For the purpose of this Sub-Section, a "street tree" means the following: (1) a tree that stands in a sidewalk, whether paved or unpaved, between the curb lines or lateral lines of a roadway and the adjacent property lines of the project site, or (2) a tree that stands in a sidewalk and is located within 50 feet of the intersection of the project's site's property line with the street frontage property line.
 - C. No Separate Payment. No separate payment shall be made for compliance with Plant Pest Control Requirements or Tree Protection Requirements. The cost of compliance with Plant Pest Control Requirements and Tree Protection Requirements shall be deemed included in the GC Contractor's bid for the Project.

3.16 PROJECT IDENTIFICATION SIGNAGE:

- A. The GC Contractor shall provide, install and maintain Project identification and other signs where indicated to inform public and individuals seeking entrance to the Project.



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- B. In order to properly convey notice to persons entering upon a City construction site, the GC Contractor shall furnish and install a sign at the entrance (gates) as follows:

NO TRESPASSING

AUTHORIZED PERSONNEL ONLY

- C. If no construction fence exists at the site, this notice shall be conveyed by incorporating the above language into safety materials (barriers, tape, and signs).
D. Provide temporary, directional signs for construction personnel and visitors.
E. Maintain and touch up signs so that they are legible at all times.

3.17 PROJECT CONSTRUCTION SIGN AND RENDERING:

A. PROJECT SIGN:

- 1 Responsibility: The GC Contractor shall produce and install one (1) project sign which shall be posted and maintained upon the site of the project at a place and in a position directed by the Commissioner. The GC Contractor shall protect the sign from damage during the continuance of work under the Contract and shall do all patching of lettering, painting and bracing thereof necessary to maintain the sign in first class condition and in proper position. Prior to fabrication, the GC Contractor shall submit an 8-1/2" x 11" color match print proof from the sign manufacturer of the completed sign for approval by the Commissioner.
- 2 Sign Quality: The GC Contractor shall provide all materials required for the production of the sign as specified herein. Workmanship shall be of the best quality, free from defects and shall be produced in a timely manner.
- 3 Schedule: Upon project mobilization, the GC Contractor shall commence production and installation of the sign.
- 4 Removal: At the completion of all work under the Contract, the GC Contractor shall remove and dispose of the project sign away from the site.
- 5 Sign construction:
 - a. Frame: The frame shall be from quality dressed 2"x2" pine, fire retardant, pressure treated lumber, that surrounds the inside back edge of the sign. The sign shall have one (1) intermediate vertical and two (2) diagonal supports, glued and screwed for rigidity. Frame shall be painted white with two (2) coats of exterior enamel paint, prior to mounting of sign panel.
 - b. Edging: U-shaped, 22 gauge aluminum edging, with a white enameled finish to match sign background, shall run around entire edging of sign panel and frame. Corners shall be mitered for a tight fit. Channel dimensions shall be 1" inch (overlap to sign panel face) x 1 3/4" (or as required across frame depth) x 1" (back overlap).
 - c. Sign Panel: 4' x 8' panel shall be constructed in one (1) piece of 14 gauge (.0785") 6061-T6 aluminum. This panel shall be pre-finished both sides with a glossy white baked-on enamel finish and be flush with edge of 2" x 2" wood frame. Samples must be submitted for approval.
 - d. Fastening: Fasten sign panel to wood frame using cadmium plated no. 8 sheet metal screws at 1/2" below edge of panel and 8" on center. The U-shaped aluminum channel



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shall be applied over the wood frame edge and fastened with cadmium plated no. 8 sheet metal screws at 12" on center around the entire perimeter.

6 Sign Graphics:

- a. A digital file of the project sign will be provided to the GC Contractor by the Commissioner's representative for printing. The Commissioner's representative shall insert the project name and names and titles of personnel (3 or more) and any other required information associated with the project. All signs may include a second panel for a project rendering as described in Sub-Section 3.17.B herein.
- b. The digital file shall be reproduced at the Sign Panel size of 4' x 8' on 3M High Performance Vinyl or approved equal. The 3M High Performance Vinyl or equivalent shall be guaranteed for nine (9) years. Guarantee must cover fading, peeling, chipping or cracking. The sign manufacturer is required to maintain all specified Pantone Matching System (PMS) type and other composition elements represented in the digital file of the project sign.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.17.B

B. PROJECT RENDERING:

1. Responsibility: In addition to the Project Sign, the GC Contractor shall furnish and install one (1) sign showing a rendering of the project. A digital file of the project rendering will be provided to the GC Contractor by the Commissioner's representative. From an approved image file provided by DDC, the Project Rendering is to be sized, printed, and mounted in an identical manner as described in Sub-Section 3.17 A above for the Project Sign. A color match print proof from the sign manufacturer of the Rendering Sign printed from the supplied file is to be submitted to DDC for approval before fabrication. The Rendering Sign is to be posted at the same height as the Project Sign. Where possible, the Rendering Sign shall be mounted with a perfect match of the short sides of the rectangle so that the Rendering Sign and the Project Sign together will create one long rectangle.
2. Removal: At the completion of all work under the Contract, the GC Contractor shall remove and dispose of the project rendering away from the site.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.18

3.18 SECURITY GUARDS/FIRE GUARDS ON SITE:

A. SECURITY GUARDS (WATCHMEN):

1. The GC Contractor shall provide competent Security Guards on the site until final acceptance of the project or earlier if so notified in writing by the Commissioner. The Security Service shall commence with the start of work. There shall be no less than one (1) Security Guard on duty every day, including Saturdays, Sunday and Holidays, 24 hours a day, except between the hours of 8:00 A.M. and 4:00 P.M. on any day which is a regular working day for a majority of the trades. This exception during the working day shall not apply after the finishing painting of the plaster work is commenced; thereafter, not less than one (1) Security Guard shall be on duty continuously, 24 hours a day, until final completion of the project or earlier if so notified in writing by the Commissioner.



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2. Every Security Guard shall be required to hold a "Certificate of Fitness" issued by the Fire Department. Every Security Guard shall, during his/her tour of duty, perform the duties of Fire Guard in addition to his/her security obligations.
 3. Should the Commissioner find that any Security Guard is unsatisfactory, such guard shall be replaced by the GC Contractor upon the written demand of the Commissioner.
 4. Each Security Guard furnished by the GC Contractor shall be instructed by the GC Contractor to include in their duties the entire construction site including the Field Office, temporary structures, and equipment, materials, etc.
 5. Should any Contractor consider the security requirements outlined above inadequate, that Contractor shall provide such additional security as it thinks necessary, after obtaining the written consent of the Commissioner. The additional cost of such approved increased protection will be paid by the Contractor who provides the additional protection.
 6. Nothing contained in this Sub-Section shall diminish in any way the responsibility of each Contractor for its own work, materials, tools, equipment, nor for any of the other risks and obligations outlined hereinbefore in this Sub-Section.
- B. **COSTS** - The GC Contractor shall employ Security Guards/Fire Guards at all times, except as otherwise modified by the detailed Specifications and as approved by the Commissioner, for the purpose of safeguarding and protecting the site. All costs for Security Guards/Fire Guards shall be borne by the GC Contractor.
- C. **RESPONSIBILITY** - All Contractors will be responsible for safeguarding and protecting their own work, materials, tools and equipment.

3.19

SAFETY:

- A. Each Contractor, in compliance with requirements of Section 01 35 26, **SAFETY REQUIREMENTS PROCEDURES**, shall provide and maintain all necessary temporary closures, guard rails, and barricades to adequately protect all workers and the public from possible injury. Any removal of these items, during the progress of the work, shall be replaced by the GC Contractor at no additional cost to the City.

END OF SECTION 01 50 00



SECTION 01 54 11
TEMPORARY ELEVATORS AND HOISTS

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This section includes the following:
1. Temporary Use, Operation and Maintenance of Elevators during Construction
 - a. For New buildings up to 15 Stories
 - b. For New buildings over 15 Stories
 - c. For Existing Buildings
 2. Temporary Construction Hoists and Hoist ways (For Material and Personnel)

1.3 RELATED SECTIONS: include without limitation the following:

- A. Section 01 10 00 SUMMARY
B. Section 01 42 00 REFERENCES
C. Section 01 50 00 TEMPORARY FACILITIES, SERVICES AND CONTROLS
D. Section 01 54 23 TEMPORARY SCAFFOLDS AND SWING STAGING
E. Section 01 77 00 CLOSE OUT PROCEDURES

PART II – PRODUCTS (Not Used)

PART III – EXECUTION

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.1

3.1 TEMPORARY USE, OPERATION AND MAINTENANCE OF ELEVATORS DURING CONSTRUCTION FOR NEW BUILDINGS UP TO AND INCLUDING 15 STORIES:

- A. **INSTALLATION:** The GC Contractor shall install, complete, operate, and maintain in good working order, as indicated herein, one (1) selected main elevator for the transport of employees of all Contractors and representatives of the DDC and other Governmental Agencies having jurisdiction of work at the project. The GC Contractor shall furnish, install and maintain such elevator in good working order, including all necessary hoisting ropes, governor cables, traveling conductor cables, operating devices, temporary hand reset target annunciators, temporary signal devices, and all other permanent or temporary parts. The installation, operation and maintenance of the temporary elevator and all equipment and/or parts utilized in connection therewith shall be in accordance with the rules and regulations of all agencies and/or entities having jurisdiction over elevators in temporary use.



- B. **RESPONSIBILITY:** The GC Contractor shall be responsible for any injury to persons or damage to property arising out of the temporary elevator and all equipment and/or parts utilized in connection therewith.
- C. **COSTS:** The GC Contractor shall be responsible for all costs in connection with the temporary elevator, including without limitation: (1) installing and operating the temporary elevator, (2) maintaining the temporary elevator in clean, proper operating condition, including the cost of lubricants and/or parts for such maintenance, (3) performing all work in pits, shaft ways and machine rooms necessary for the operation of the temporary elevator, (4) replacing the temporary elevator or any equipment or parts utilized in connection therewith, if required, due to damage, destruction or excessive wear or corrosion, except for the replacement of hoisting ropes as set forth below, (5) performing all required electrical work in connection with the temporary elevator, (6) providing all electric power required to operate the temporary elevator, (7) providing all necessary conduit and wiring connections for the proper operation and signaling of the temporary elevator, and (8) providing all labor for the operation and maintenance of the temporary elevator, including on an overtime basis if necessary. The total Contract Price shall include all costs in connection with the temporary elevator, including without limitation, the costs specified herein. The Electrical Contractor shall pay the costs of all electrical current used for operating the temporary elevators.
- D. **ACTIVATION TIME:** The GC Contractor shall keep the temporary elevator activated from a period of time of 15 minutes before the established starting time of that trade which starts work earliest in the morning to 15 minutes after the established quitting time of that trade which stops work latest in the evening. This applies to every day in the week, which is established as a regular working day for the aforementioned trades.
- E. **COMMENCEMENT OF SERVICE:** The GC Contractor shall begin to provide temporary elevator service using the selected main passenger elevator no later than eight (8) weeks (40 working days) after the machine room roof slab, or that portion of it surrounding the elevator shaft, has been placed. No later than three (3) weeks (15 working days) after the machine room roof slab, or that portion of it surrounding the elevator shaft, has been placed the following work shall have been completed:
1. The shaft shall have been completely enclosed by either the permanent or a temporary enclosure meeting the requirements of the law.
 2. The machine room shall have been made completely watertight either by permanent or temporary construction. Beams or other devices, either permanent or temporary shall be provided which will enable the safe and practicable hoisting of the elevator machinery for installation.
 3. There shall have been installed on all floors at the shaft way entrances to the elevator, solid substantial frames and either sliding or swing doors with substantial hardware and door locks and any necessary approved wire mesh barricades for adjacent shaft ways.
 4. There shall have been furnished and installed solid substantial enclosures at front, back, sides and top of car platform enclosure, with emergency exit at top of car, excepting that the portion of the front at the elevator entrance shall have been provided with a substantial temporary door or gate.
- F. **ELECTRICAL INSTALLATION:** The Electrical Contractor, not later than 20 calendar days after the machine room roof slab or that portion of its surrounding the elevator has been placed, shall have furnished and installed temporary or permanent power and light feeders as required for the elevator used for temporary service and shall have connected such feeders to the terminals on the starter panels or controllers in the machine room to the low voltage transformers and car light outlets in the center of shaftway and for the car control and signal traveling cables. The Electrical Contractor shall make all these required connections as soon as the equipment is declared ready for such connections by the Resident Engineer.
- G. **REMOVAL:** When elevators for permanent use have been installed and are in condition for service, and when directed by the Commissioner, the GC Contractor shall remove the temporary enclosures and all



- temporary elevator equipment and promptly proceed with the installation of the permanent equipment as required under the Contract.
- H. **INSPECTION:** Before temporary elevator equipment is removed, a joint inspection of the equipment shall be made by the GC Contractor and the Commissioner to determine the condition of this equipment upon the discontinuation of its temporary use. If this inspection deems it necessary, the GC Contractor shall furnish and install new governor and compensating ropes, new traveling cables and new controller parts, etc. The car and counterweight safeties shall be thoroughly cleaned of all dirt and all foreign matter, then properly lubricated and placed in good operating condition to the satisfaction of the Commissioner. If it is determined and ordered by the Commissioner that new hoist ropes are required, such ropes shall be installed and payment therefore will be made in accordance with Article 26 of the Contract.
- I. **REPLACEMENT:** The GC Contractor shall furnish and install new equipment or parts of the temporary elevator installation that have been damaged, destroyed, or that indicate excessive wear or corrosion, excepting the replacement of hoisting ropes. All shaft ways, pits, motor rooms and sheave spaces used for temporary operation of elevators shall be thoroughly cleaned. Where lubricated rails are used they shall be washed down. If roller guides are used, all rust, dirt, etc., must be moved from the rails. The full cost of parts replacement, cleaning, etc., shall be borne by the GC Contractor except for the replacement of hoisting ropes.
- J. **LIMITATIONS OF USE:** The temporary elevator shall not be used during its operation for the hoisting of materials or the removal of rubbish, but shall be limited only to the transportation of employees of all Contractors and the representatives of DDC and other Governmental Agencies having jurisdiction of work at the project. However, the Resident Engineer may grant special permission at specified times to the various Contractors to hoist materials, which in the Resident Engineer's opinion will not overload or damage the elevator installation, but only after such times as all plastering has been completed from the second floor up. The particular Contractor using the elevator for the hoisting of its material shall be responsible for any damage to the elevator during the entire period of such use. The GC Contractor shall give notification in writing to the Resident Engineer of any alleged damage to the elevator installation within 24 hours after the elevator has been employed for the hoisting of materials by the particular Contractor(s). As indicated above the GC Contractor shall be responsible for the replacement of any equipment or parts of the temporary elevator that have been damaged.
- K. **PAYMENT FOR USE:** The GC Contractor shall be paid for its operation and maintenance of the temporary elevator or permanent elevator used for temporary service at the daily rate indicated under the Item of its Contract. All other costs in connection with the elevator installation and equipment, excepting electrical work done by the Electrical Contractor under its Contract, shall be included in the Total Bid price submitted by the GC Contractor.
- L. **LIQUIDATED DAMAGES:** The GC Contractor will be charged at the rate of \$100 per day for each day it fails to provide the temporary elevator service described in this section beginning with the 41st working day after the machine room roof slab, or that portion of it surrounding the elevator shaft, has been placed and stripped. This charge will be deducted from any amount due and owing to the GC Contractor.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.2

3.2

TEMPORARY USE, OPERATION AND MAINTENANCE OF ELEVATORS DURING CONSTRUCTION FOR NEW BUILDING OVER 15 STORIES:

- A. **INSTALLATION:** The GC Contractor shall install, complete, operate, and maintain in good working order, as indicated herein, two (2) selected main elevators for the transport of employees of all Contractors and representatives of the DDC and other Governmental Agencies having jurisdiction over work at the project. The GC Contractor shall furnish, install, and maintain such elevators in good working order, including all necessary hoisting ropes, governor cables, traveling conductor cables, operating devices, temporary hand reset target annunciators, temporary signal devices, and all other permanent or temporary parts.



The installation, operation and maintenance of the temporary elevators and all equipment and/or parts utilized in connection therewith shall be in accordance with the rules and regulations of all agencies and/or entities having jurisdiction over elevators in temporary use. The two (2) elevators shall not be operated simultaneously.

- B. **RESPONSIBILITY:** The GC Contractor shall be responsible for any injury to persons or damage to property arising out of the temporary elevators and all equipment and/or parts utilized in connection therewith.
- C. **COSTS:** The GC Contractor shall be responsible for all costs in connection with the temporary elevator, including without limitation: (1) installing and operating the temporary elevators, (2) maintaining the temporary elevators in clean, proper operating condition, including the cost of lubricants and/or parts for such maintenance, (3) performing all work in pits, shaft ways and machine rooms necessary for the operation of the temporary elevators, (4) replacing the temporary elevators or any equipment or parts utilized in connection therewith, if required, due to damage, destruction or excessive wear or corrosion, except for the replacement of hoisting ropes as set forth below, (5) performing all required electrical work in connection with the temporary elevator, (6) providing all electric power required to operate the temporary elevators, (7) providing all necessary conduit and wiring connections for the proper operation and signaling of the temporary elevator, and (8) providing all labor for the operation and maintenance of the temporary elevators, including on an overtime basis if necessary. The total Contract Price shall include all costs in connection with the temporary elevators, including without limitation, the costs specified herein. The Electrical Contractor shall pay the costs of all electrical current used for operating the temporary elevators.
- D. **ACTIVATION TIME:** The GC Contractor shall keep the temporary elevator activated from a period of time of 15 minutes before the established starting time of that trade which starts work earliest in the morning to 15 minutes after the established quitting time of that trade which stops work latest in the evening. This applies to every day in the week, which is established as a regular working day for the aforementioned trades.
- E. **LOW RISE ELEVATOR:** The GC Contractor shall begin to provide temporary elevator service using one (1) selected main passenger elevator no later than six (6) weeks (30 working days) after the 12th Floor slab, or that portion of it surrounding the elevator shaft, has been placed and stripped. No later than one (1) week, five (5) working days, after the 12th Floor slab, or that portion of it surrounding the elevator shaft, has been placed and stripped the following work shall have been completed:
1. The shaft shall have been completely enclosed up to the 12th Floor by either the permanent or a temporary enclosure meeting the requirements of the law.
 2. A temporary machine room enclosure shall have been provided at the 11th Floor and shall have been made completely watertight either by permanent or temporary construction. Beams or other devices, either permanent or temporary, shall be provided which will enable the safe and practicable hoisting of the elevator machinery for installation.
 3. There shall have been installed on all floors up to and including the 9th Floor at the shaft entrances to the elevator, solid substantial wood frames and either sliding or swing doors with substantial hardware and door locks, also any necessary approved wire mesh barricades for adjacent shaft ways.
 4. There shall have been furnished and installed solid substantial enclosures at front, back, sides and top of car platform enclosure, with an emergency exit at top of car, excepting that the portion of the front at the elevator entrance shall have been provided with a substantial temporary door or gate.
- F. **ELECTRICAL INSTALLATION:** The Electrical Contractor, not later than 10 calendar days after the 12th Floor slab or that portion of it surrounding the elevator, has been poured and stripped, shall have furnished and installed temporary or permanent power and light feeders as required for the elevator used for temporary service and shall have connected such feeders to the terminals on the starter panels or



- controllers in the temporary machine room, to the low voltage transformers and car light outlets in the center of the shaftway and for the car control and signal traveling cables. The Electrical Contractor shall make all these required connections as soon as the Equipment is declared ready for such connections by the Resident Engineer.
- G. **HIGH RISE ELEVATOR:** The GC Contractor shall begin to provide temporary elevator service to all floors, using a selected main passenger elevator, no later than eight (8) weeks (40 working days) after the machine room roof slab, or that portion of it surrounding the elevator shaft, has been placed. No later than three (3) weeks (15 working days) after the machine room roof slab, or that portion of it surrounding the elevator shaft, has been placed, the following work shall have been completed:
1. The shaft shall have been completely enclosed by either the permanent or temporary enclosure, meeting the requirements of the law.
 2. The machine room shall have been made completely watertight either by permanent or temporary construction. Beams or other devices, either permanent or temporary shall be provided which will enable the safe and practicable hoisting of the elevator machinery for installation.
 3. There shall have been installed on all floors at the shaftway entrances to the elevator, solid substantial frames and either sliding or swing doors with substantial hardware and door locks, also any necessary approved wire mesh barricades for adjacent shaftways.
 4. There shall have been furnished and installed, solid substantial enclosures at front, back, sides and top of car platform enclosure, with an emergency exit at top of car, excepting that the portion of the front at the elevator entrance shall have been provided with a substantial temporary door or gate.
- H. **ELECTRICAL INSTALLATION:** The Electrical Contractor, not later than 20 calendar days after the machine room slab or that portion of it surrounding the elevator shaft has been placed, shall have furnished and installed temporary or permanent power and light feeders as required for the high rise elevator to be used for temporary service and shall have connected such feeders to the terminals on the motor-generator starter panels or controllers in the machine room, to the signal circuits low voltage transformers for the annunciators and car light outlets in the center of shaft way. The Electrical Contractor shall make all these required connections as soon as the equipment is declared ready for such connections by the Resident Engineer.
- I. When the high rise elevator is completed and ready for temporary operation, the low rise temporary elevator shall be shut down.
- J. **REMOVAL:** When one (1) or more elevators for permanent use have been installed and are in condition for service, and when directed by the Commissioner, the GC Contractor shall remove the temporary enclosures and all temporary elevator equipment, and promptly proceed with the installation of the permanent equipment as required under the Contract.
- K. **INSPECTION:** Before temporary elevator equipment is removed, a joint inspection of the equipment shall be made by the GC Contractor and the Commissioner to determine the condition of this equipment upon the discontinuation of its temporary use. If this inspection determines it necessary, the GC Contractor shall furnish and install new governor and compensating ropes, new traveling cables, new controller parts, etc. The car and counterweight safeties shall be thoroughly cleaned of all dirt and all foreign matter, then properly lubricated and placed in good operating condition to the satisfaction of the Commissioner. If it is determined and ordered by the Commissioner that new hoist ropes are required, such ropes shall be installed and payment therefore will be made in accordance with Article 26 of the Contract.
- L. **REPLACEMENT:** The GC Contractor shall furnish and install new equipment or parts for any equipment or parts of the temporary elevator installations that were damaged, destroyed, or that indicate excessive wear or corrosion, excepting the replacement of hoisting ropes. All shaft ways, pits, motor rooms and sheaves spaces used for temporary operation of elevators shall be thoroughly cleaned down. Where



lubricated rails are used they shall be washed down, if roller guides are used, all rust, dirt, etc., must be removed from the rails. The full cost of parts replacement cleaning, etc., shall be borne by the GC Contractor except for the replacement of hoisting ropes.

- M. **LIMITATIONS OF USE:** The temporary elevator shall not be used during its operation for the hoisting of materials or the removal of rubbish, but shall be limited only to the transportation of employees of all Contractors and the representatives of DDC and other Governmental Agencies having jurisdiction of work at the project. However, the Resident Engineer may grant special permission at specified times to the various Contractors to hoist materials, which in the Resident Engineer's opinion will not overload or damage the elevator installation, but only after such times as all plastering has been completed from the second floor up. The particular Contractor using the elevator for the hoisting of its material shall be responsible for any damage to the elevator during the entire period of such use. The GC Contractor shall give notification in writing to the Resident Engineer of any alleged damage to the elevator installation within 24 hours after the elevator has been employed for the hoisting of materials by the other Contractors. As indicated above the GC Contractor shall be responsible for the replacement of any equipment or parts of the temporary elevator that have been damaged.
- N. **PAYMENT FOR USE:** The GC Contractor shall be paid for its operation and maintenance of each temporary elevator or permanent elevator used for temporary service at the daily rate indicated under the item of its Contract. All other costs in connection with elevator installation and equipment, excepting Electrical Work done by the Electrical Contractor under its Contract, shall be included in the Total Bid Price submitted by the Electrical Contractor for Electrical Work.
- O. **LIQUIDATED DAMAGES:** The GC Contractor will be charged at the rate of \$100 per day for each day it fails to provide the temporary elevator service described in this Section beginning with the 31st working day after the 12th Floor slab, or that portion of the 12th Floor slab surrounding the elevator shaft, has been placed and stripped. This charge will be deducted from any amount due and owing to the GC Contractor.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB SECTION 3.3

3.3

TEMPORARY USE, OPERATION AND MAINTENANCE OF ELEVATORS DURING CONSTRUCTION FOR EXISTING BUILDINGS:

- A. The GC Contractor may use, at the Commissioner's discretion, one (1) selected elevator in the project for temporary operation by the GC Contractor for the transportation of employees of all Contractors and representatives of DDC and other Governmental Agencies having jurisdiction over work at the Project. The operation of the temporary elevator and all equipment and/or parts utilized in connection therewith shall be in accordance with the rules and regulations of all agencies and/or entities having jurisdiction over elevators in temporary use.
- B. **RESPONSIBILITY:** The GC Contractor shall be responsible for any injury to persons or damage to property arising out of the temporary elevator and all equipment and/or parts utilized in connection therewith.
- C. **ACTIVATION TIME:** The GC Contractor shall keep the temporary elevator activated from a period of time of 15 minutes before the established starting time of that trade which starts work earliest in the morning to 15 minutes after the established quitting time of that trade which stops work latest in the evening. This applies to every day in the week, which is established as a regular working day for the aforementioned trades.
- D. **REPLACEMENT:** The GC Contractor shall furnish and install new equipment or parts for any equipment or parts of the elevator for temporary operation that were damaged, destroyed, or that indicate excessive wear or corrosion, excepting the replacement of hoisting ropes. All shaft ways, pits, motor rooms and sheave spaces used for temporary operation of elevators shall be thoroughly cleaned down. Where



lubricated rails are used they shall be washed down, if roller guides are used, all rust, dirt, etc., must be moved from the rails. The full cost of parts replacement, cleaning, etc., shall be borne by the GC Contractor except for the replacement of hoisting ropes. If it is determined and ordered by the Commissioner that new hoist ropes are requested, such ropes shall be installed and payment therefore will be made in accordance with Article 26 of the Contract.

- E. **LIMITATIONS OF USE:** The temporary elevator shall not be used during its operation for the hoisting of materials or the removal of rubbish, but shall be limited only to the transportation of employees of all Contractors and the representative of DDC and other Governmental Agencies having jurisdiction of work at the project. However, the Resident Engineer may grant special permission at specified times to the various Contractors to hoist materials which, in the Resident Engineer's opinion, will not overload or damage the elevator installation. The particular Contractor using the elevator for the hoisting of its material shall be responsible for any damage to the elevator during the entire period of such use. The GC Contractor shall give notification in writing to the Resident Engineer of any alleged employed for the hoisting of materials by the particular Contractor(s). As indicated above the GC Contractor shall be responsible for the replacement of any equipment or parts of the temporary elevator that have been damaged.
- F. **COSTS:** The GC Contractor shall pay all costs for the operation and maintenance of the elevator for temporary operation. All other costs in connection with the elevator and equipment excepting electrical work done by the Electrical Contractor under its Contract, shall be included in the Total Bid price submitted by the GC Contractor.
- G. **LIQUIDATED DAMAGES:** The GC Contractor will be charged at the rate of \$100 per day for each day it fails to provide elevator services described in this section beginning with 15 consecutive calendar days from notice to proceed. This charge will be deducted from any amount due and owing to the GC Contractor.

3.4 TEMPORARY HOISTS AND HOISTWAYS (FOR MATERIAL AND PERSONNEL):

- A. **RESPONSIBILITY:** The GC Contractor shall provide adequate numbers of material hoists for the most expeditious performance of all parts of its work. All other Contractors are required to provide their own facilities for the hoisting of materials under their respective Contracts. However, these Contractors may make arrangements, whenever possible, with the GC Contractor for the use of its hoist upon such terms and conditions as it may prescribe.
- B. **LOCATIONS:** No hoists shall be constructed at such locations as will interfere with, or affect the construction of, floor arches, or the work of other Contractors. The hoists may be located at the exterior sides of the structure or in the courtyard and extend upward adjacent to the line of window openings. The hoists shall be located a sufficient distance from the exterior walls and be so protected as to prevent any of the permanent work from being damaged, stained or marred.
- C. **ELEVATOR SHAFT:** Wherever possible, one or more of the permanent elevator shafts may be used as temporary hoist ways, providing such use complies with the requirements of the Building Code of the City of New York and has been approved by the Commissioner, and providing further it entails no interference with the progress of the work of any Contractor.
- D. **PROTECTION FOR INTERIOR HOISTS:** All interior material hoist ways shall be enclosed on each floor and shall be adequately protected with appropriate safety guards. In no event shall the protection be less than that required by law.



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END OF SECTION 01 54 11

TEMPORARY ELEVATORS AND HOISTS
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SECTION 01 54 23
TEMPORARY SCAFFOLDING AND PLATFORMS

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].
- B. Section 01 35 26: Safety Requirements Procedures.
- C. Each Contractor shall comply with the requirements of "The City of New York Department of Design and Construction Safety Requirements". This document is included in the Information for Bidders.

1.2 SUMMARY:

- A. This Section includes administrative and general procedural requirements for Temporary Scaffolding and Platforms, including:
 - 1. Conformance
 - 2. Responsibility
 - 3. Jobsite Documentation and Submittals
 - 4. Inspections
- B. This Section governs ALL scaffold used on DDC project sites including, but not limited to, Suspended Scaffold, Supported Scaffold and Sidewalk Sheds.

1.3 CONFORMANCE:

- A. Unless otherwise indicated, the GC Contractor is responsible for providing, erecting, installing and maintaining all temporary scaffolding and platforms which shall comply with requirements of Chapter 33 (Safeguards During Construction or Demolition) of the NYC Building Code, NYC Local Law 52 of 2005, OSHA Construction Standard 1926 Subpart L, and furnishing the items and personnel set forth in this section.

1.4 RESPONSIBILITY:

- A. Jobsite Safety Coordinator: The GC Contractor shall designate and employ a Jobsite Safety Coordinator, who shall be a competent person, who shall have a daily presence on the project site during scaffold use. This designee must possess and maintain a valid New York City Department of Buildings supported scaffold certificate of completion. An alternate shall also be designated, in the event that the Jobsite Safety Coordinator is absent. The Jobsite Safety Coordinator shall:
 - 1. Verify completeness of documentation and submittals (as described below).
 - 2. Verify that inspections are performed, including pull tests (see below), reports are filed and reported deficiencies are corrected.
 - 3. Monitor trades using scaffold.
 - 4. Limit access to scaffold areas that are tagged for non-use.
 - 5. Inform trades of scaffold load limitations.
 - 6. Monitor loading of decks.
 - 7. Verify that any ties that are temporarily removed are properly restored in the same shift.
 - 8. Verify that outriggers and planks that are moved are properly set up and secured.
 - 9. Verify that all scaffold decks in use have proper access/egress.
 - 10. Verify that all open sides of decks in excess of 14 inches have proper guardrails and toe-boards.



11. Notify appropriate parties, including but not limited to the Resident Engineer, site safety coordinator / monitor, site safety consultant, scaffold users, contractor and the scaffold engineer, of misuses, non-conformances, hazards and accidents.
 12. Keep a log of significant actions and events connected with the scaffolding.
- B. The GC Contractor shall be responsible for erection, maintenance and dismantling of the scaffold / shed in conformance with the New York City Building Code and OSHA requirements, contract documents and engineering specifications. The GC Contractor shall also be guided by generally accepted standards of scaffold industry practice as promulgated by the Scaffold Industry Association.
- C. The GC Contractor shall require the subcontractor responsible for erecting the scaffolding to engage a Scaffold Engineer, licensed as a professional engineer by the State of New York. The Scaffold Engineer shall be responsible to ensure the following: (1) that the installation design is in compliance with requirements of the New York City Building Code and OSHA, (2) that the design comports with the capabilities of the components and the characteristics of the site, (3) that scaffold loads on the host building, including netting, have been properly considered, and (4) that the design documents provide accurate information for erectors and users.
- D. Scaffold users are trade contractors assigned to work on the scaffold. Training certificates from a New York City Department of Buildings approved training provider are mandatory. These users have the duty to become familiar with the New York City Building Code and OSHA requirements germane to users, to obey the instructions of the Jobsite Safety Coordinator and inform the Jobsite Safety Coordinator of known hazards, non-conformances or violations.

1.5 JOBSITE DOCUMENTATION AND SUBMITTALS:

The GC Contractor shall prepare, obtain and submit the following to the Resident Engineer:

- A. NYC Department of Buildings permit(s) for scaffold and sidewalk sheds (as applicable) including filing applications signed and sealed by a Professional Engineer licensed in the State of New York;
- B. Site logistics plan / site safety plan;
- C. Installation drawing(s), design and product data to be provided for all scaffold(s) and shed(s) must include, at a minimum:
 1. Plan(s);
 2. Elevation(s);
 3. Duty load designation; "standard" (150 psf live load) or "heavy duty" (300 psf live load).
 4. Details including base support, anchors and ties;
 5. Notes and specifications including load limits, number of planked levels, tie spacing, netting, and sequence of installation and removal.
 6. Anchorage into sound material.
 7. Load limits based on pull tests;
 8. Specifications for pull test(s), method, proof load and the number of trials;
 9. Elevations, levels or heights, where anchorage is made into masonry;
 10. Specifications for frames, planks, screw jacks, anchors, and any other ancillary hardware;
 11. Samples for anchors, ties and netting;
 12. Sequence of operations for erection and demolition;
 13. Location plan, heights, widths, "jumps" over doorways and driveways;
 14. Specify size, maximum span and maximum spacing of headers and stringers;
 15. Specify legs, girts, braces, nailing and connections;
 16. All sidewalk sheds shall be designed, engineered, signed and sealed by a Professional Engineer licensed in the State of New York;
 - a. Generic (not job specific) engineering drawings are satisfactory for standard sheds and arrangements.



- b. Special engineering is required for custom sheds, site-specific problems or non-standard arrangements.

1.6 INSPECTIONS:

- A. Signed inspection reports shall be issued for each inspection and pull-test below, and shall be logged and maintained on site by the Jobsite Safety Coordinator for the duration of the project.
- B. Pull testing shall be required during design, and during or post erection, where anchorage is made into masonry. The Scaffold Engineer shall specify the test method, proof load and the number of trials.
- C. Sidewalk sheds shall be inspected after initial installation, major modification, or damage and thence every three months. Inspections shall be by a Scaffold Engineer for custom sheds and by a Competent Person employed by the GC Contractor for standard sheds.
- D. Scaffolds shall be inspected by the Scaffold Engineer during erection, post-erection and prior to use and thence every three months. The Scaffold Engineer shall repeat inspections after major alteration/modification, damage.
- E. A Qualified Person assigned by the GC Contractor shall inspect the progress of erection and dismantling, and the condition and integrity of the sidewalk sheds after high winds, major storms and at least once per month during usage.
- F. A Qualified Person assigned by the GC Contractor shall inspect the progress of erection and dismantling at least weekly, and the condition and integrity of the scaffold after high winds, major storms and at least once per month during usage.
- G. Scaffolds and Sidewalk Sheds shall be inspected daily by the Jobsite Safety Coordinator or alternate prior to use by scaffold users. The inspection results must be recorded in the maintenance log, available on-site at all times.
- H. At the completion of the project, submit all inspection documents as Miscellaneous Record Documents in accordance with Section 01 78 39, CONTRACT RECORD DOCUMENTS.

1.7 LADDERS AND STAIRS:

- A. The GC Contractor shall provide and maintain ladders or temporary stairs extending from the street to the first story, and to and from every floor and roof level of the project.

1.8 ACCESS AND EXITS:

- A. The ladders or temporary stairs shall be of acceptable size, number and location, so that proper and convenient access may be had by those required to proceed to and from all parts of the project.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 54 23



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
MULTIPLE CONTRACT PROJECTS
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NO TEXT

TEMPORARY SCAFFOLDING AND PLATFORMS
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**SECTION 01 73 00
EXECUTION**

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This Section includes general procedural requirements governing execution of the Work including without limitation the following:
1. Delivery of Materials
 2. Contractor's Superintendent
 3. Surveys
 4. Borings
 5. Examination
 6. Preparation
 7. Deferred Construction
 8. Installation
 9. Permits
 10. Transportation
 11. Sleeves and Hangers
 12. Sleeve and Hanger Drawings
 13. Cutting and Patching
 14. Location of Partitions
 15. Furniture and Equipment
 16. Removal of Rubbish and Surplus Material
 17. Cleaning
 18. Security And Protection of Work Site
 19. Maintenance of Site and Adjoining Property
 20. Maintenance of Project Site
 21. Safety Precautions for Control Circuits
 22. Obstructions in Drainage Lines

1.3 RELATED SECTIONS: Include without limitation the following:

- | | | |
|----|------------------|--|
| A. | Section 01 10 00 | SUMMARY |
| B. | Section 01 31 00 | PROJECT MANAGEMENT AND COORDINATION |
| C. | Section 01 33 00 | SUBMITTAL PROCEDURES |
| D. | Section 01 74 19 | CONSTRUCTION WASTE MANAGEMENT & DISPOSAL |
| E. | Section 01 77 00 | CLOSEOUT PROCEDURES |
| F. | Section 01 78 39 | CONTRACT RECORD DOCUMENTS |



1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.5 QUALITY ASSURANCE:

- A. Land Surveyor Qualifications: A professional land surveyor who is licensed in the State of New York and who is experienced in providing land-surveying services of the kind indicated.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION

3.1 DELIVERY OF MATERIALS:

- A. Material Orders: Each Contractor shall furnish to the Commissioner a copy of each material order, indicating date of order and quantity of material, and shall also notify the Commissioner when materials have been delivered to the site and in what quantities.
- B. Ample Quantities: Each Contractor shall deliver materials in ample quantities to insure the most prompt and uninterrupted progress of the work so as to complete the work within the Contract time.
- C. Containers: The manufacturer's containers shall be delivered with unbroken seals and shall bear proper labels.
- D. Each Contractor shall coordinate Deliveries: in order to avoid delaying or impeding the progress of the work of any related Contractor.
- E. Handling: Each Contractor shall provide equipment and personnel to handle products by methods to prevent soiling or damage.
 - 1. Promptly inspect shipments to assure products comply with requirements, quantities are correct, and products are undamaged.
 - 2. Promptly return damaged shipments or incorrect orders to manufacturer.
 - 3. For materials or equipment to be reused or salvaged, use special care in removal, storage and reinstallation to insure proper function in completed work.
- F. Storage: Store products in accordance with provisions of Sub-Section 3.1, and periodically inspect to assure that stored products are undamaged and are maintained under required conditions.
- G. Stacking: All materials shall be properly stacked in convenient places adjacent to the site, or where directed, and protected in a satisfactory manner. Stacked materials shall be so arranged as to not interfere with visibility of traffic control devices.
- H. Overloading: If authority is given to store materials in any part of the project area, they shall be so stored as to cause no overloading.
- I. No Interference: If it becomes necessary to remove and restack materials to avoid impeding the progress of any part of the work or interfering with the work to be done by any other Contractor, the relevant Contractor shall remove and restack such materials at no additional cost to the City.



3.2 CONTRACTOR'S CONSTRUCTION SUPERINTENDENT:

- A. Contractor's Construction Superintendent: Each Contractor shall devote its time and personal attention to the work and shall employ and retain at the project site, from the commencement until the entire completion of the work, a Contractor's Construction Superintendent. Each Contractor's Construction Superintendent shall be registered with the New York City Department of Buildings in compliance with the Construction Superintendent Rule of the City of New York and shall be competent and capable of maintaining proper supervision and care of the work and shall be acceptable to the Commissioner, who, in the absence of the applicable Contractor, and irrespective of any superintendent or foreman employed by any subcontractor, shall see that the instructions of the Commissioner are carried out.
- B. Replacement: Each Contractor's Construction Superintendent on the job shall not be changed or removed without the consent of the Commissioner.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB SECTION 3.3

3.3 SURVEYS:

- A. Line and Grade: The City will establish a baseline and bench mark near the site of the work for use of the relevant Contractor(s) in connection with the performance of the work.
- B. Responsibility: Each Contractor shall establish all other lines and elevations required for its work and shall be solely responsible for the accuracy thereof.
- C. Safeguard All Points: Each Contractor shall safeguard all points, stakes, grade marks and bench marks made or established by each Contractor on the work, shall re-establish same if disturbed and bear the entire expense of rectifying the work improperly installed due to not maintaining, not protecting or removing without authorization such established points, stakes, or marks.
- D. City Monuments and Markers: No work shall be performed near City monuments or marks so as to disturb them until the said monuments or marks have been referenced or reset or otherwise disposed of by the relevant Agency or party who installed them.
- E. Foundations: The GC Contractor shall furnish certification from a licensed Surveyor that all portions of the foundation work are located in accordance with the Contract Drawings and at the elevations required thereby. This certification shall show the actual locations and the actual elevations of all the work in relation to the locations and elevations shown on the Contract Drawings, including but not restricted to the following:
 - 1. The locations and elevations of all piles, if any.
 - 2. Elevations of tops of all spread footings, tops of pile caps, and tops of all foundation walls, elevator pit walls and ramp walls.
 - 3. Location of all footing centers and pier centers including those for exterior wall columns.
 - 4. Location of all foundation walls including wall columns, elevator pit walls and ramp walls.
- F. Wall Lines: After the first courses of masonry or stone have been laid, the GC Contractor shall establish the permanent lines of exterior walls. The GC Contractor shall furnish promptly, certification from a licensed Surveyor, in the form of signed original drawings showing the exact location of such wall lines, of all portions of all structures. Except at its own risk, the GC Contractor shall not proceed further with the erection of walls until the Surveyor's certification has been submitted and verified for correct location of wall lines.
- G. Surveyor: The Surveyor selected for any of the purposes mentioned in Paragraph E and Paragraph F above, and Paragraph I below, shall be a land Surveyor licensed in the State of New York and shall be subject to the approval of the Commissioner. The Surveyor shall not be a regular employee of the GC Contractor, nor shall the Surveyor have any interest in the Contract. The Surveyor shall not be employed by the GC Contractor in laying out any work, it being intended that the Surveyor's certification shall



represent an independent and disinterested verification of such layout. The Surveyor shall report to the Department of Design and Construction's Resident Engineer each time upon arrival to and departure from the site and review with the Resident Engineer the data required for the project.

- H. Final Certification: Final certification shall be submitted upon completion of the work or upon completion of any subdivision of the work as directed by the Commissioner. Any exceptions or deviations from the drawings shall be noted on the final certificate and there shall be included any maps, plates, notes, pertinent documents and data necessary, in the opinion of the Commissioner, to constitute a full and complete report.
- I. Final Survey: The GC Contractor shall submit to the Department of Design and Construction for submission to the Department of Buildings a final Survey by the licensed Surveyor showing the location of the new Structure, before completion of the Structure. This Survey shall show the location of the first tier of beams or of the first floor; the finish grades of the open spaces on the plot; the established curb level and the location of all other Structures on the plan, together with the location and boundaries of the lot or plot upon which the Structure is constructed, curb cuts, all yard dimensions, etc.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4

3.4 BORINGS:

- A. The work of this Sub-Section shall be the responsibility of the GC Contractor, unless otherwise indicated.
- B. Reference Drawings: The Boring Drawings as listed on the title sheet are for information to the bidder and are to be used under the conditions as follows:
 - 1. Boring Logs: shown on the Boring Drawings, record information obtained under engineering supervision in the course of exploration carried out by or under the direction of forces of the Department of Design and Construction at the site.
 - 2. Soils and Rock Samples: All inferences are drawn from the indications observed as made by engineering and scientific personnel. All such inferences and all records of the work including soil samples and rock cores, if any, are available to bidders for inspection.
 - 3. Certification of Samples: The City certifies that the work was carried out as stated, and that the soil samples and rock cores, if any were referred to, were actually taken from the site at the times, places and in the manner indicated. The samples are available for inspection in the Department of Design and Construction Subsurface Exploration Section.
 - 4. Bidder's Responsibility: The bidder, however, is responsible for any conclusions to be drawn from the work. If the bidder accepts those of the City, it must do so at its own risk. If the bidder prefers not to assume such risk, the bidder is under the obligation of employing its own experts to analyze the available information, and must be responsible for any consequences of acting on their conclusions.
 - 5. Continuity Not Guarantee: The City does not guarantee continuity of conditions shown at actual boring locations over the entire site. Where possible, borings are located to avoid all obstructions and previous construction which can be found by inspection of the surface and the bidder is required to estimate the influence of such features from its own inspection of the site.

3.5 EXAMINATION:

- A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
 - 1. Before construction, verify the location and points of connection of utility services.



- B. Existing Utilities: The existence and location of underground utilities and other construction indicated as existing are not guaranteed. Before beginning site work, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- C. Acceptance of Conditions: Examine substrates, areas, and conditions, with the subcontractor responsible for installation or application present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.6 ENVIRONMENTAL ASSESSMENTS:

- A. City Responsibilities: An Environmental Assessment and survey is performed by the NYC DDC and its findings are included in the Contract Documents. In accordance with the NYC Administrative Code Title 15 Chapter 1 an asbestos survey is required to be performed by an Asbestos Investigator certified by the NYC Department of Environmental Protection (DEP) to identify the presence of asbestos containing material (ACM) prior to any alteration, renovation or demolition activity. The findings of such survey are required for the submission of approvals and permits issued by the NYC Department of Buildings (DOB). When the findings indicate that asbestos containing material is present and will be disturbed during the alteration, renovation or demolition activity then abatement design specifications will be incorporated into the contract documents. The GC Contractor shall comply with all federal, state and local asbestos regulations affecting the work for this Contract.
- B. Contractor Responsibility: The GC Contractor shall comply with all federal, state and local environmental regulations, including without limitation USEPA and OSHA regulations which require the GC Contractor to assess if lead based paint will be disturbed during the work in order to protect his/her workers and the building occupants from migration of lead dust into the air. The GC Contractor shall comply with all federal, state and local environmental waste disposal regulation which may be required during the work. The GC Contractor is required to hire licensed abatement and disposal companies for the requisite work.

3.7 PREPARATION:

- A. Field Measurements: Each Contractor shall verify all dimensions and conditions on the job so that all work will properly join the existing work.
- B. Each Contractor, before commencing work, shall examine all adjoining work on which its work is in any way dependent on good workmanship in accordance to the intent of the Specification and Contract Drawings. The Contractor shall report to the Commissioner any condition that will prevent it from performing work that conforms to the required standard.



- C. Existing Utility Information: Furnish information to the Commissioner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- D. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

3.8 DEFERRED CONSTRUCTION:

- A. Where necessity for deferred construction is certified by the Commissioner, in order to permit the installation of any item or items of equipment required to be furnished and installed concurrent with the time allowed for doing and completing the work of the Contract, each Contractor shall defer construction work limited to adequate areas as approved by the Commissioner.
- B. Each Contractor shall confer with the affected subcontractors and ascertain arrangements, time and facilities necessary to be made by the Contractor in order to execute the provisions specified herein.

3.9 INSTALLATION:

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work and work of other sub-contractors to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by the Design Consultant.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.



3.10 PERMITS:

Each Contractor shall comply with all local, state and federal laws, rules and regulations affecting the Work of this Project, including, without limitation, (1) obtaining all necessary permits for the performance of the Work prior to commencement thereof, and (2) complying with all requirements for the disposal of demolition and/or construction debris, waste, etc., including disposal in City landfills. Each Contractor shall be responsible for all costs in connection with such regulatory compliance, unless otherwise specified in the Contract.

3.11 TRANSPORTATION:

- A. **Availability:** It shall be the duty of each Contractor to determine the availability of transportation facilities and dockage for the use of its employees, equipment and material and the conditions under which such use will be permitted.
- B. **Costs:** If transportation facilities and dockage are available and are permitted to be used by the governmental agency having jurisdiction, the applicable Contractor shall pay all necessary costs and expenses, and abide by all rules and regulations promulgated in connection therewith.
- C. **Vehicles:** With respect to the use of vehicles on highways and bridges, each Contractor's attention is directed to the limitations set forth in the Rules of the City of New York, Title 34, Chapter 4, Section 4-15.
- D. **Continued Use:** It is understood that the Commissioner makes no warranty as to the continued use by each Contractor of such facilities.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.12

3.12 SLEEVES AND HANGERS:

- A. **Coordinate with Progress Schedule:** Contractors required to furnish and install conduits, outlets, piping sleeves, boxes, inserts and all other materials and equipment that is to be built into the work performed by the GC Contractor, shall promptly furnish and set such sleeves or other materials in conformity with the requirements of the project.
- B. **Cooperation of Contractors:** All Contractors and their subcontractors shall fully cooperate with each other in connection with the performance of the above work as "cutting in" new work is neither contemplated nor will it be tolerated.
- C. **Timeliness:** In the event that timely delivery of sleeves and other materials cannot be made, and to avoid delay, the affected Contractor may arrange to have boxes or other forms set at the locations where the piping or other material is to pass through or into the slabs, walls or other work. Upon the subsequent installation of the sleeves or other material, the GC Contractor shall fill around them with materials as required by the Contract. The necessary expenditures incurred for the boxing out and filling in shall be borne by the Contractor or Contractors responsible therefore.
- D. **Inserts:** The GC Contractor is to install strip inserts four (4) foot on center and perpendicular to beams in ceiling slabs of boiler, machine and mechanical equipment rooms. Inserts are to be installed for strippable concrete slabs only.



REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.13

3.13 SLEEVE AND PENETRATION DRAWINGS:

- A. As soon as practicable after the commencement of work and when the order in which concrete for the first slabs, walls, etc. to be poured is determined, the Plumbing, HVAC and Electrical Contractors shall submit to the Resident Engineer a sketch indicating the location and size of all penetrations for sleeves, ducts, etc. which will be required to accommodate the mechanical trades, in order to determine if such penetrations will materially weaken the project's structure. The sketch shall be stamped and returned if approved and/or comments will be transmitted. Each Contractor shall continue to submit sketches as the pouring schedule and the concrete work progresses and, until approvals for the penetration sketches have been given. Each Contractor shall not predicate their layout work on unapproved sketches.

3.14 CUTTING AND PATCHING:

- A. Responsibility: Each Contractor shall do all cutting, patching and restoration required by its work, unless otherwise particularly specified in the Specifications of its Contract.
- B. Restore Work: Each Contractor shall restore any work they damage that is the work of another Contractor.
- C. Competent Workers: All restoration work shall be done to the satisfaction of the Commissioner by competent workers skilled in the trade required by such restoration. If, in the judgment of the Commissioner, workers engaged in restoration work are incompetent, they shall be replaced immediately by competent workers.
- D. Structural Elements: Do not cut and patch structural elements without the prior approval, in writing, of the Resident Engineer.
- E. Operational Elements: Do not cut and patch operating elements and related components.
- F. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Commissioner's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- G. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.
- H. Removals: Each Contractor must remove from the premises all demolished materials of every nature or description resulting from cutting, patching and restoration work, in accordance with the requirements hereinafter stipulated under Sub-Section 3.17 herein and as further required in Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.15

3.15 LOCATION OF PARTITIONS:

- A. Within three (3) weeks after the concrete slabs have been poured on each floor level, the GC Contractor shall immediately locate accurately all of the partitions, including the door openings, on the floor slabs in a manner approved by the Resident Engineer.



3.16 FURNITURE AND EQUIPMENT:

- A. Responsibility: Each Contractor is responsible for moving all loose furniture and/or equipment in all areas where the location of such furniture and/or equipment interferes with the proper performance of its work.
- B. Protection: All such furniture and/or equipment must be adequately protected with dust cloths and returned to their original locations when directed to do so by the Resident Engineer.

3.17 REMOVAL OF RUBBISH AND SURPLUS MATERIALS:

- A. Of the waste that is generated during demolition, as many of the waste materials as economically feasible, and as stated here, shall be reused, salvaged, or recycled. Waste disposal in landfills shall be minimized. Comply with requirements of Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.
- B. Rubbish: Rubbish shall not be thrown from the windows or other parts of the project. Mason's rubbish, dirt and other dust-producing material shall be wetted down periodically.
- C. Location: Each Contractor shall clean Project site and work area daily and sweep up and deposit, at a location designated on each floor by the GC Contractor, all of its rubbish, debris and waste materials, as it accumulates and when directed by the Resident Engineer. Wood crating shall be broken up, neatly bundled, tied and stacked ready for removal and be deposited at a location designated on each floor by the GC Contractor.
 - 1. Comply with requirements in NYC Fire Department for removal of combustible waste materials and debris.
 - 2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 degrees F (27 degrees C).
 - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- D. Laborers: Each Contractor shall be responsible for the removal of all rubbish, etc., from the site. Each Contractor shall remove from the designated locations all piles of rubbish, debris, waste material and wood crating as they accumulate and when directed by the Resident Engineer, and shall remove them from the site. Each Contractor shall employ and keep engaged for this purpose an adequate number of laborers.
- E. Surplus Materials: Each Contractor shall remove from the site all surplus materials when there is no further use for same.
- F. Tools And Materials: At the conclusion of the work, all erection plant, tools, temporary structures and materials belonging to each Contractor shall be promptly removed.
- G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

3.18 CLEANING:

- A. Each Contractor shall thoroughly clean all equipment and materials furnished and installed and shall deliver such materials and equipment undamaged in a clean and new appearing condition up to date of Final Acceptance.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended.



If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

- D. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- E. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration up to date of Final Acceptance.
- F. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration up to date of Final Acceptance.

3.19 SECURITY AND PROTECTION OF WORK SITE:

- A. Each Contractor shall provide protection of its installed work, including appropriate protective coverings and maintain conditions that ensure installed Work is without damage or deterioration up to date of Final Acceptance.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.
- C. Secure and protect work and work site against damage, loss, injury, theft and/or vandalism.
- D. Maintain daily sign-in sheets of workers and visitors and make the sheets available to the Commissioner.

3.20 MAINTENANCE OF SITE AND ADJOINING PROPERTY:

- A. The GC Contractor shall take over and maintain the Project site, after order to start work.
- B. The GC Contractor shall be responsible for the safety of the adjoining property, including sidewalks, paving, fences, sewers, water, gas, electric and other mains, pipes and conduits etc. until the date of Final Acceptance. The GC Contractor shall, at its own expense, except as otherwise specified, protect same and maintain them in at least as good a condition as that in which the GC Contractor finds them.
- C. All pavements, sidewalks, roads and approaches to fire hydrants shall be kept clear at all times, maintained and repaired to serviceable condition with materials to match existing.
- D. Provide and keep in good repair all bridging and decking necessary to maintain vehicular and pedestrian traffic.
- E. The GC Contractor shall also remove all snow and ice as it accumulates on the sidewalks within the Contract Limits Lines.

3.21 MAINTENANCE OF PROJECT SITE:

- A. The GC Contractor shall take over and maintain all project areas, after order to start work.
- B. Until the date of Final Acceptance, the GC Contractor shall be responsible for the safety of all project areas, including water, gas, electric and other mains and pipes and conduits and shall at the GC Contractor's own expense, except as otherwise specified, protect same and maintain them in at least as good condition as that in which the GC Contractor finds them.
- C. All pavements, sidewalks, roads and approaches to fire hydrants shall be kept clear at all times, maintained, and if damaged, repaired to serviceable conditions with materials to match existing.
- D. The Contractor for General Construction Work shall keep the space for the Resident Engineer in a clean condition.



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3.22 SAFETY PRECAUTIONS FOR CONTROL CIRCUITS:

- A. Control circuits, the failure of which will cause a hazard to life and property, shall comply with the New York City Electrical Code.

3.23 OBSTRUCTIONS IN DRAINAGE LINES:

- A. The GC Contractor shall be responsible for all obstructions occurring in all drainage lines, fittings and fixtures after the installations and cleaning of these drainage lines, fittings and fixtures as certified by the Resident Engineer. Roof drains shall be kept clear of any and all debris. Any stoppage shall be repaired immediately at the expense of the GC Contractor

END OF SECTION 01 73 00

EXECUTION
01 73 00 - 11



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NO TEXT

EXECUTION
01 73 00 - 12



SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This section includes administrative and procedural requirements for the management and disposal of construction waste and includes the following requirements:
1. Waste Management Goals
 2. Waste Management Plan
 3. Progress Reports
 4. Progress Meetings
 5. Management Plan Implementation
- B. This Section includes:
1. Definitions
 2. Waste Management Performance Requirements
 3. Reference Resources
 4. Submittals
 5. Quality Assurance
 6. Waste Plan Implementation
 7. Additional Demolition and Salvage Requirements
 8. Disposal

1.3 RELATED SECTIONS: Include without limitation the following:

- | | | |
|----|------------------|--|
| A. | Section 01 10 00 | SUMMARY |
| B. | Section 01 31 00 | PROJECT MANAGEMENT AND COORDINATION |
| C. | Section 01 32 00 | CONSTRUCTION PROGRESS DOCUMENTATION |
| D. | Section 01 73 00 | EXECUTION |
| E. | Section 01 77 00 | CLOSEOUT PROCEDURES |
| F. | Section 01 78 39 | CONSTRUCTION RECORD DOCUMENTS |
| G. | Section 01 81 13 | SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS |

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or



combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

- C. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk or the like.
- D. Construction and Demolition Waste: Solid wastes typically including building materials, trash debris and rubble resulting from remodeling, repair and demolition operations. Hazardous materials and land clearing waste are not included.
- E. Diversion from Landfill: To remove, or have removed, from the site for recycling, reuse or salvage, material that might otherwise be sent to a landfill.
- F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product.
- G. Recycle (recycling): To sort, separate, process, treat or reconstitute solid waste and other discarded materials for the purpose of redirecting such materials into the manufacture of useful products. Recycling does not include burning, incinerating or thermally destroying waste.
- H. Return: To give back reusable items or unused products to vendors.
- I. Reuse: To reuse excess or discarded construction material in some manner on the Project site.
- J. Salvage: To remove a waste material from the Project site for resale or reuse.
- K. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable and reusable material.
- L. Waste Management Plan: A project-related plan for the collection, transportation and disposal of waste generated at the construction site. The purpose of the plan is to ultimately reduce the amount of material becoming landfill.

1.5

WASTE MANAGEMENT PERFORMANCE REQUIREMENTS:

- A. The City of New York has established that this project shall generate the least amount of waste possible and that processes that ensure the generation of as little waste as possible due to error, inaccurate planning, breakage, mishandling, contamination, or other factors shall be employed.
- B. Of the waste that is generated during demolition, as many of the waste materials as economically feasible, and as stated here, shall be reused, salvaged, or recycled. Waste disposal in landfills shall be minimized.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 1.5 C

- C. LEED CERTIFICATION: The City of New York will seek LEED (Leadership in Energy and Environmental Design) certification for this Project as indicated in the Addendum to the General Conditions from the U.S. Green Building Council. The documentation required here will be used for this purpose. LEED awards points for a variety of sustainable design measures on a project, one of which is the reuse and recycling of project waste.
- D. DIVERSION REQUIREMENTS. A minimum of 75% of total Project demolition waste (by weight) shall be diverted from landfill. The following waste categories are likely candidates to be included in the diversion plan as applicable for this project:
 - 1. Concrete
 - 2. Bricks
 - 3. Concrete masonry units (CMU)
 - 4. Asphalt



5. Metals (e.g. banding, stud trim, ceiling grid, ductwork, piping, rebar, roofing, other trim, steel, iron, galvanized, stainless steel, aluminum, copper, zinc, brass, bronze)
 6. Clean dimensional wood
 7. Carpet and pad
 8. Drywall
 9. Ceiling tiles
 10. Cardboard, paper, and packaging
 11. Reuse items indicated on the Drawings and/or elsewhere in the Specification
- E. All fluorescent lamps, HID lamps and mercury-containing thermostats removed from the site shall be recycled.
- F. Recycling on the job, subject to the Commissioner's approval, is encouraged on the site itself, such as the crushing and reuse of removed sound concrete and stone. Include these categories in the Waste Management Plan.

1.6 REFERENCES, RESOURCES:

- A. DDC encourages its contractors to seek information from websites and experts in salvage or recycling in order to minimize disposal costs. There are numerous opportunities to sell, salvage, or to donate salvage and accrue tax benefits (which would accrue to each Contractor); also there are outlets that will pick up, and in some cases buy recyclable materials. Examples of information resources are as follows:
1. DDC's Sustainable Design web site:
http://www.nyc.gov/html/ddc/html/design/sustainable_home.shtm This includes a manual on Construction and Demolition Waste Reduction and Recycling, a Sample Waste Management Plan and sample C&D Waste Management log. Standard forms for a Waste Management Plan and a C&D Waste Management Log are included at the end of this section.
 2. Web Resources
(Information only; no warranty or endorsement is implied.)
www.wastematch.org Site of New York Waste Match, a materials exchange database and service
www.bignyc.org Site of Build It Green NYC, a non profit outlet for salvaged and surplus building materials
www.usgbc.org Site of the United States Green Building Council, with a description of the LEED certification process and requirements for C&D waste recycling
www.epa.gov/epawaste/index.htm Site of the U.S. Environmental Protection Agency that discusses construction and demolition waste issues, and links to other resources.

1.7 SUBMITTALS:

- A. The GC Contractor shall be responsible for the development and implementation of a Waste Management Plan for the Project. Each Contractor shall assist in the development of that Plan, and collect and deposit their waste and recyclable materials in accordance with the approved Plan.
- B. DRAFT WASTE MANAGEMENT PLAN. Within fifteen (15) days after receipt of Notice to Proceed, or prior to any waste removal, whichever occurs sooner, the GC Contractor shall submit to the Commissioner a Draft Waste Management Plan. Include separate sections for demolition and



construction waste. The Plan shall demonstrate how the performance goals will be met, and contain the following:

1. List of materials targeted for reuse, salvage, or recycling, and names, addresses, and phone numbers of receiving facilities/companies that will be purchasing or accepting each material.
 2. Description of onsite and/or offsite sorting methods for all materials to be removed from site.
 3. If mixed construction and demolition waste is to be sorted off-site, provide a letter from the processor stating the average percentage of mixed construction and demolition waste they recycle.
 4. Landfill information: Names of landfills where non-recyclable/reusable/salvageable waste will be disposed, and list of applicable tipping fees.
 5. Materials handling procedures: A description of the means by which any recyclable, salvaged, or reused materials will be protected from contamination, and collected in a manner that will meet the requirements for acceptance by the designated recycling processors.
 6. Transportation: A description of the means of transportation and destination for recycled materials.
 7. Meetings: Description of regular meetings to be held to address waste management.
 8. Sample spreadsheet and description of how the implementation of the plan will be documented on a monthly basis.
- C. FINAL WASTE MANAGEMENT PLAN. Within fifteen (15) days of Commissioner's approval of the Draft Plan, the GC Contractor shall submit a Final Waste Management Plan.
- D. PROGRESS REPORTS. The GC Contractor shall submit monthly a Waste Management Progress Report, containing the following information:
1. Project title, name of company completing report, and dates of period covered by the report
 2. Report on the disposal of all jobsite waste. A DDC C&D Waste Management Log form is available on the DDC Sustainable Design website and included at the end of this section. For each material type recycled, reused, salvaged or land filled, provide the following:
 - a. Date and ticket number of removal
 - b. Identity of material hauler
 - c. Material Category
 - d. Total quantity of waste, in tones/cubic yards, by type
 - e. Quantity of waste salvaged, recycled and/or reused, by type
 - f. Total quantity of waste diverted from landfill (recycled, salvaged, reused) as a percentage of total waste
 - g. Recipient of each material type
 3. Provide monthly and cumulative project totals of waste, quantity diverted, and percentage diverted.
 4. Note that the unit of measure may be either tons or cubic yards, but must be consistent for all shipments and all materials throughout the project. Reports with inconsistent or mixed units will not be reviewed and will be returned for re-submission.
 5. Include legible copies of on-site logs, weight tickets and receipts. Receipts shall be from charitable organizations, recycling and/or disposal site operators who can legally accept the materials for the purpose of reuse, recycling or disposal. Contractor shall save such original documents for the life of the project plus seven (7) years.



- E. LEED Submittal: For LEED designated projects submit LEED Letter Template for the applicable credit, signed by each Contractor, tabulating total waste material, quantities diverted and means by which it is diverted, and statement that requirements for the credit have been met.
- F. Refrigerant Recovery. Submit Qualification data for Refrigerant recovery technician and statement of refrigerant recovery, signed by the refrigerant recovery technician responsible for recovering refrigerant stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.8 QUALITY ASSURANCE:

- A. The GC Contractor shall designate a Waste Management Coordinator, to ensure compliance with this section. Coordinator shall be present at Project site full time for the duration of the project.
- B. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.
- C. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
- D. Waste management plans, documentation and implementation shall be discussed at the following meetings:
 - 1. Pre-demolition kick-off meeting
 - 2. Pre-construction kick-off meeting
 - 3. Regular job-site meetings
 - 4. Contractor toolbox meetings

PART II – PRODUCTS (Not Used)

PART III – EXECUTION

3.1 WASTE PLAN IMPLEMENTATION:

- A. The GC Contractor shall implement the Waste Management Plan, coordinate the Plan with each Contractor and all affected subcontractors, and designate one individual as the Construction Waste Management Representative, who will be responsible for communicating the progress of the Plan with the Commissioner on a regular basis, and for assembling the required LEED documentation.
- B. Each Contractor shall be responsible for the provision of containers and the removal of all waste, non-returned surplus materials, and rubbish from the site in accordance with the approved Waste Management Plan. Each Contractor shall oversee and document the results of the Plan. Monies received for salvaged materials shall remain with the applicable Contractor, except the monies for those items specifically identified elsewhere in the specifications, or indicated on the drawings as belonging to others.
- C. Responsibilities of Subcontractors: Each subcontractor shall be responsible for collecting its waste, non-returned surplus materials, and rubbish, in accordance with the Waste Management Plan.
- D. Distribution. The GC Contractor shall distribute copies of the Waste Management Plan to each Contractor, Subcontractors, Resident Engineer, Construction Manager, and Commissioner.
- E. Instructions. The GC Contractor shall provide on-site instruction of proper waste management procedures to be used by all parties in appropriate stages of the Project.



- F. Procedures. Conduct waste management operations to ensure minimum interference with site vegetation, roads, streets, walks and other adjacent occupied and used facilities.
1. Collect co-mingled waste and/or separate all recyclable waste in accordance with the Plan Specific areas on the Project site are to be designated, and appropriate containers and bins clearly marked with acceptable and unacceptable materials.
 2. Inspect containers and bins for contamination and remove contaminated materials if found.
 3. Comply with the General Conditions for controlling dust and dirt, environmental protection, and noise control.

3.2 ADDITIONAL DEMOLITION AND SALVAGE REQUIREMENTS:

- A. Demolition and salvage of additional items indicated in other sections of the Project Specifications require special attention as part of the overall 75 % diversion from landfill. Specific requirements for special attention are designated in other sections of the Project Specifications.

3.3 DISPOSAL:

- A. General. Except for items or material to be salvaged, recycled or otherwise reused, remove waste material from the Project site and legally dispose of them in a manner acceptable to authorities having jurisdiction.
1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on site.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning. Do not burn waste materials
- C. Disposal. Transport waste materials off Project Site and legally dispose of them.

END OF SECTION 01 74 19

Construction and Demolition Waste – Management Log



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NO TEXT



**SECTION 01 77 00
CLOSEOUT PROCEDURES**

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This Section includes administrative and general procedural requirements for Closeout Procedures, including without limitation the following:
1. Definitions
 2. Substantial Completion
 3. Final Acceptance
 4. Warranties
 5. Final Cleaning
 6. Repair of the Work
- B. LEED: Refer to the Addendum to identify whether this project is designed to comply with a Certification Level according to the U.S. Green Building Council's Leadership in Energy & Environmental Design (LEED) Rating System, as specified in Section 01 81 13, "SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS."
- C. COMMISSIONING: Refer to the Addendum to identify whether this project will be commissioned by an independent third party under separate contract with the City of New York. Commissioning shall be in accordance with ASHRAE and USGBC LEED- NC procedures, as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS. Each Contractor shall cooperate with the commissioning agent and provide whatever assistance is required.

1.3 RELATED SECTIONS: include without limitation the following:

- | | | |
|----|------------------|--|
| A. | Section 01 10 00 | SUMMARY |
| B. | Section 01 33 00 | SUBMITTAL PROCEDURES |
| C. | Section 01 74 19 | CONSTRUCTION WASTE MANAGEMENT & DISPOSAL |
| D. | Section 01 78 39 | CONTRACT RECORD DOCUMENTS |
| E. | Section 01 79 00 | DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION |

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and



specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

- C. Substantial Completion: shall mean the written determination by the Commissioner that the Work required under the Contract is substantially, but not entirely, complete.
- D. Final Acceptance: shall mean final written acceptance of all the Work by the Commissioner, a copy of which shall be sent to each Contractor.

1.5 SUBSTANTIAL COMPLETION:

- A. Preliminary Procedures: Before requesting inspection to determine the date of Substantial Completion, each Contractor shall complete and supply all items required by the contract specifications, General Conditions, Addendum to the General Conditions, change orders or other directives from the Commissioner's representatives. The required items will include all contract requirements for substantial completion, including but not limited to items related to releases, regulatory approvals, warranties and guarantees, record documents, testing, demonstration and orientation, final clean up and repairs, and all specific checklist of items by the Resident Engineer. (See Attachment "A" at the end of this section for sample requirements for Substantial Completion).
- B. Prepare and submit a list to the Resident Engineer of incomplete items, the value of incomplete construction, and reasons the work is not complete.
- C. Inspection: Each Contractor shall submit to the Resident Engineer a written request for inspection for Substantial Completion. Within ten (10) days of receipt of the request, the Resident Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. The Resident Engineer may request the services, as required, of the Design Consultant, Client Agency Representative and/or other entities having involvement with the Work to assist in the inspection of the Work. If the Resident Engineer makes a determination that the work is substantially complete and approves the Final Punch List and the date for Final Acceptance, he/she will so advise the Commissioner and recommend issuance of the Certificate of Substantial Completion. If the Resident Engineer determines that the work is not substantially complete, he/she will notify the applicable Contractor of those items that must be completed or corrected before the Certificate of Substantial Completion will be issued.
 - 1 Re-inspection: Contractor shall request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
 - 2 Results of completed inspection will form the basis of requirements for Final Acceptance.

1.6 FINAL ACCEPTANCE:

- A. Preliminary Procedures: Before requesting final inspection for Final Acceptance of the Work and Final Payment, each Contractor shall complete the following. (Note that the following are to be completed, submitted as appropriate, and approved by the Commissioner, as applicable, prior to the final inspection and are not to be submitted for approval or otherwise at the final inspection unless specifically indicated). List exceptions in the request.
 - 1. Verify that all required submittals have been provided to the Commissioner including but not limited to the following:
 - a. Manufacturer's cleaning instructions
 - b. Posted instructions
 - c. As-built Record Documents (Drawings, specifications, and product data) as described in Section 01 78 39, CONTRACT RECORD DOCUMENTS, incorporating any changes required by the Commissioner as a result of the review of the submission prior to the pre-final inspection.



- d. Operation and Maintenance Manuals, including Preventive Maintenance, Special Tools, Repair Requirements, Parts List, Spare Parts List, and Operating Instructions.
 - e. Completion of required Demonstration and Orientation of designated personnel in operation and maintenance of systems, sub-systems and equipment.
 - f. Applicable LEED Building submittals as described in Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS.
 - g. Construction progress photographs as described in Section 01 32 33, PHOTOGRAPHIC DOCUMENTATION.
2. Submit a certified copy of the final approved Punch List of items to be completed or corrected. The certified copy of the Punch List shall state that each item has been completed or otherwise resolved for acceptance, and shall be endorsed and dated by the applicable Contractor(s).
 3. Submit pest-control final inspection report and survey as required in Section 01 50 00, TEMPORARY FACILITIES, SERVICES, AND CONTROLS.
 4. Submit record documents and similar final record information.
 5. Deliver tools, spare parts, extra stock and similar items.
 6. Complete final clean-up requirements including touch-up painting of marred surfaces.
 7. Submit final meter readings for utilities as applicable, a measured record of stored fuel, and similar data as of the date when the City took possession of and assumed responsibility for corresponding elements of the work.
- B. Final Inspection: Each Contractor shall submit to the Resident Engineer a written request for inspection for Final Acceptance of the Work. Within ten (10) days of receipt of the request, the Resident Engineer will either proceed with inspection or notify the applicable Contractor(s) of unfulfilled requirements. The Resident Engineer may request the services, as required, of the Design Consultant, Client Agency Representative and/or other entities having involvement with the Work to assist in the inspection of the Work. If the Resident Engineer finds that all items on the Final Approved Punch List are complete and no further work remains to be done, he/she will so advise the Commissioner and recommend the issuance of the determination of Final Acceptance. If the Resident Engineer determines that the work is not complete, he/she will notify the applicable Contractor(s) of those items that must be completed or corrected before the determination of Final Acceptance will be issued.
- C. Final Acceptance: The Work will be accepted as final and complete as of the date of the Resident Engineer's inspection if, upon such inspection, the Resident Engineer finds that all items on the Punch List are complete and no further Work remains to be done. The Commissioner will then issue a written determination of Final Acceptance.

1.7 WARRANTIES:

- A. The items of materials and/or equipment for which manufacturer warranties are required are listed in Schedule B of the Addendum. For each item of material and/or equipment listed in Schedule B, each Contractor as applicable shall obtain a written warranty from the manufacturer. Such warranty shall provide that the material or equipment is free from defects for the period set forth in Schedule B and will be replaced or repaired within such specified period. Each contractor shall deliver all required warranties to the Commissioner.
- B. Unless indicated otherwise Warranties are to take effect on the date of Substantial Completion.
- C. Submittal Time: Submit written Warranties on request of the Commissioner for designated portions of the Work where commencement of Warranties other than date of Substantial Completion is indicated.
- D. Partial Occupancy: Submit properly executed Warranties to the Commissioner within 15 days of completion of designated portions of the Work that are completed and occupied or used by the City.
- E. Organize the Warranty documents into an orderly sequence based on the Project Specification Divisions and Section Numbers.



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1. Bind Warranties in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 2. Identify each binder on the front and spine with the typed or printed title "WARRANTIES;" name and location of Project; Capitol Budget Project Number (FMS ID); and Contractor's name and address.
 3. Provide heavy paper dividers with plastic-covered tabs for each separate Warranty. Mark tab to identify the product or installation.
 4. Provide a typed description of each product or installation being warranted, including the name of the product, and the name, address, and telephone number of the Installer.
- F. When warranted materials and/or equipment require operation and maintenance manuals, provide additional copies of each required Warranty in each required manual. Refer to Section 01 78 39, CONTRACT RECORD DOCUMENTS, for requirements of Operation and Maintenance Manuals.

PART II – PRODUCTS

2.1 MATERIALS:

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART III – EXECUTION

3.1 FINAL CLEANING:

- A. General: Unless otherwise noted, the GC Contractor shall provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 1. Complete the following cleaning operations as applicable before requesting inspection for Final Acceptance of the Work for entire Project or for a portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.



- h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
 - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - k. Remove labels that are not permanent.
 - l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - 1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
 - m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - n. Replace parts subject to unusual operating conditions.
 - o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - q. The HVAC Contractor shall be responsible to clean ducts, blowers, and coils if units were operated without filters during construction.
 - r. The Electrical Contractor shall be responsible to clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
 - s. Leave Project clean and ready for occupancy.
 - t. Construction Waste Disposal: Comply with waste disposal requirements in Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.
- C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests, as required in Section 01 50 00, TEMPORARY FACILITIES, SERVICES AND CONTROLS. Prepare and submit a Pest Control report to the Commissioner.
- D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on City's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

3.2 REPAIR OF THE WORK:

- A. Subject to the terms of the Contract each Contractor shall complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Each contractor, as applicable shall repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.



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1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.
 - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 01 77 00



SECTION 01 77 00

ATTACHMENT 'A'

The following list is a general sample of Substantial Completion requirements, including but not limited to:

1. Prepare and submit a list to the Resident Engineer, of incomplete items, the value of incomplete construction, and reasons the work is not complete.
2. Obtain and submit any necessary releases enabling the City unrestricted use of the project and access to services and utilities.
3. Regulatory Approvals: Submit all required documentation from applicable Governing Authorities, including, but not limited to, Department of Buildings (DoB); Department of Transportation (DoT); Department of Environmental Protection (DEP); Fire Department (FDNY); etc. Documentation to include, but not limited to, the following:
 - a. Building Permits, Applications and Sign-offs.
 - b. Permits and Sign-off for construction fences; sidewalk bridges; scaffolds, cranes and derricks; utilities; etc.
 - c. Certificates of Inspections and Sign-offs.
 - d. Required Certificates and Use Permits.
 - e. Certificate of Occupancy (C.O.), Temporary Certificate of Occupancy (T.C.O.) or Letter of Completion as applicable.
4. Submit specific warranties required by the specifications, final certifications, and similar documents.
5. Prepare and submit Record Documents as described in Section 01 78 39, **CONTRACT RECORD DOCUMENTS**, including but not limited to; approved documentation from Governing Authorities; as-built record drawings and specifications; product data; operation and maintenance manuals; Final Completion construction photographs; damage or settlement surveys; final property surveys; and similar final record information. The Resident Engineer will review the submission and provide appropriate comments. If comments are significant the initial submission will be returned to the applicable Contractor for correction and re-submission incorporating the comments prior to the Final Inspection.
6. Record Waste Management Progress Report: Submit C&D Waste Management logs, with legible copies of weight tickets and receipts required in accordance with Section 01 74 19, **CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL**.
7. If applicable submit LEED Letter Template in accordance with the requirements of Section 01 81 13, **SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS**.
8. Schedule applicable Demonstration and Orientation required in other Sections of the Project Specifications and as described in Section 01 79 00, **DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION**.
9. Deliver tools, spare parts, extra materials, and similar items to location designated by Resident Engineer. Label with manufacturer's name and model number where applicable.
10. Make final changeover of permanent locks and deliver keys to the Resident Engineer. Advise Commissioner of changeover in security provisions.
11. Complete startup testing of systems as applicable.
12. Submit approved test/adjust/balance records.
13. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements as directed by the Resident Engineer.
14. If applicable complete Commissioning requirements as defined in Section 01 91 13, **GENERAL COMMISSIONING REQUIREMENTS**.
15. Complete final cleaning requirements, including touchup painting.
16. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.



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NO TEXT

CLOSEOUT PROCEDURES
01 77 00- 8



SECTION 01 78 39
CONTRACT RECORD DOCUMENTS

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This Section includes administrative and general procedural requirements for Contract Record Documents, including:
1. As-built Contract Record Drawings.
 2. As-built marked-up copies of Record Specifications, addenda and Change Orders.
 3. As-built marked-up Product Data
 4. Record Samples
 5. Construction Record Photographs
 6. Operating and Maintenance Manuals
 7. Final Site Survey
 8. Guarantees and Warranties
 9. Waste Disposal Documentation
 10. LEED Materials and Matrix
 11. Miscellaneous Record Submittals
- B. The Department of Design and Construction, at the start of construction (kick-off meeting), will furnish to each Contractor at no cost a complete set of Contract Drawings Mylars (reproducible) pertaining to the work to be performed under the Contract. It is the responsibility of each Contractor to modify the Contract Drawings to indicate all changes and corrections, if any, occurring in the work as actually installed. Each Contractor is required to furnish all other Mylar (reproducible) drawings, if necessary, such as Addenda Drawings and Supplementary Drawings as may be necessary to indicate all work in detail as actually completed. All professional seals must be blocked out. Title box complete with project title and Design Consultants' names will remain.
- C. Maintenance of Documents and Samples: Each Contractor shall maintain, during the progress of the work, an accurate record of the work as actually installed, on Contract Record Drawings, on Mylar (reproducible), in ink. Store record documents and samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition. Make documents and samples available at all times for the Resident Engineer's inspections.

Each Contractor's attention is particularly directed to the necessity of keeping accurate records of all subsurface and concealed work, so that the Contract Record Drawings contain this information in exact detail and location. Contract Record Drawings shall also show all connections, valves, gates, switches, cut-outs and similar operating equipment.

For projects designated to achieve a LEED rating each Contractor shall receive a copy of the project's LEED scorecard for the purpose of monitoring compliance with the target objectives and to facilitate coordination with the LEED Consultant. Each Contractor shall receive periodic updates of this scorecard,



and is required to submit the final version of the Scorecard at Substantial Completion with other project Record Documents.

1.3 RELATED SECTIONS: include without limitation the following:

- A. Section 01 10 00 SUMMARY
- B. Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION
- C. Section 01 32 33 PHOTOGRAPHIC DOCUMENTATION
- D. Section 01 33 00 SUBMITTAL PROCEDURES
- E. Section 01 77 00 PROJECT CLOSEOUT PROCEDURES

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.5 SUBMITTALS:

A. As-Built Contract Record Drawings: Comply with the following:

1. Progress Submission: As directed by the Resident Engineer, submit progress As-Built Contract Record Drawings at the 50% Construction Completion stage.
2. Final Submission: Before substantial completion payment, each Contractor shall furnish to the Commissioner one (1) complete set of marked-up Mylar (reproducible) As-Built Contract Record Drawings, in ink indicating all of the work and locations as actually installed, plus one (1) set of paper prints which will be furnished to the sponsoring agency by DDC.
3. As-Built Contract Record Drawings shall be of the same size as that of the Contract Drawings, with a one (1) inch margin on three (3) sides and a two (2) inch margin on the left side.
4. Each As-Built Contract Record Drawing shall bear the legend "AS-BUILT CONTRACT RECORD DRAWING" in heavy block lettering, one half (1/2) inch high, and contain the following data:

AS-BUILT CONTRACT RECORD DRAWING

Contractor's Name _____
 Contractor's Address _____
 Made by: _____ Date _____
 Checked by: _____ Date _____

Commissioner's Representatives
 (Resident Engineer) DDC
 (Plumbing Inspector) DDC
 (Heating & Ventilating Inspector) DDC
 (Electrical Inspector) DDC

5. Record Drawing Title Sheet: Each Contractor shall prepare a title sheet, the same size as the Contract Record Drawings, which shall contain the following:



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- a. Heading:
The City of New York
Department of Design and Construction
Division of Public Buildings
 - b. Capital Budget Project Number (FMS ID)
 - c. Name and Location of Project
 - d. Contractor's Name and Address
 - e. Record of changes (a caption description of work affected, and the date and number of Change Order or other authorization)
 - f. List of Record Drawings
- B. Record Specifications, Addenda and Change Order: Submit to the Commissioner two (2) copies each of marked-up Record Specifications, Addenda and Change Orders.
- C. Record Product Data: Submit to the Commissioner two (2) sets of Record Product Data.
- D. Record Construction Photographs: Submit to the Commissioner final as-built construction photographs and negatives of the completed work as described in Section 01 32 33, PHOTOGRAPHIC DOCUMENTATION.
- E. Operating and Maintenance Manuals:
1. Each contractor, as applicable shall submit three (3) copies each of preliminary manuals to the Resident Engineer for review and approval. Each Contractor shall make such corrections, changes and/or additions to the manual until deemed satisfactory by the Resident Engineer. Deliver three (3) copies of the final approved manuals to the Resident Engineer for distribution.
 2. Commissioning: Comply with the requirements of Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS, as well as the requirements set forth in sections of the Project Specifications, for projects designated for Commissioning. Submit four (4) copies each of data designated to be included in the Commissioning Operation and Maintenance Manual to the Resident Engineer. The Resident Engineer will forward such data to the Commissioning Authority/Agent (CxA) for review and comment. Each Contractor shall make such corrections, changes and/or additions to the data until deemed satisfactory and deliver four (4) copies of the final data to the Resident Engineer for use by the Commissioning Authority/Agent (CxA) to prepare the Commissioning Operation and Maintenance Manual.
 - a. Non-Commissioning Data: All remaining data not designated for Commissioning and required as part of Maintenance and Operation Manual shall be prepared and assembled in accordance with the requirements of this section for Operating and Maintenance Manuals.
- F. Final Site Survey: The GC Contractor shall submit Final Site Survey as described in Section 01 73 00, EXECUTION, in quantities requested by the Commissioner, signed and sealed by a Land Surveyor licensed in the State of New York.
- G. Guarantees and Warranties.
- H. Waste Disposal Documents and Miscellaneous Record Documents.



PART II – PRODUCTS

2.1 CONTRACT RECORD DRAWINGS:

- A. Record Prints: Each Contractor shall maintain one set of blue- or black-line white prints as applicable of the Contract Drawings and Shop Drawings. If applicable, the Record Contract Drawings and Shop Drawings shall incorporate the arrangement of the work based on the accepted Master Coordination Drawing(s) as described in Section 01 33 00, SUBMITTAL PROCEDURES.
1. Preparation: Each Contractor shall mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an understandable drawing technique.
 - c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
 2. Change Orders: All changes from Contract Drawings shall be distinctly encircled and identified by Change Order number correlating to changes listed on the "Title Sheet." Each Contractor shall show within the encircled areas the work as actually installed.
- B. Content: Types of items requiring marking include, but are not limited to, the following:
- 1 Dimensional changes to Drawings.
 - 2 Revisions to details shown on Drawings.
 - 3 Depths of foundations below first floor.
 - 4 Locations and depths of underground utilities.
 - 5 Revisions to routing of piping and conduits.
 - 6 Revisions to electrical circuitry.
 - 7 Actual equipment locations.
 - 8 Duct size and routing.
 - 9 Locations of concealed internal utilities.
 - 11 Changes made by Change Order
 - 12 Changes made following Commissioner's written orders.
 - 13 Details not on the original Contract Drawings.
 - 14 Field records for variable and concealed conditions.
 - 15 Record information on the Work that is shown only schematically.
- C. Progress Record Mylar's (reproducible): As directed by the Resident Engineer at 50% construction completion review marked-up Record Prints with the Resident Engineer and the Design Consultant. When directed by the Resident Engineer transfer progress mark-ups to a full set Mylar's (reproducible) and submit one blue line or black line record copy to the Resident Engineer. The marked-up Mylar's (reproducible) shall be retained by the GC Contractor for completion of mark-up and final submission.
- D. Final Contract Record Mylar's (reproducible): Immediately before final inspection for Certificate of Substantial Completion, each Contractor shall review marked-up Record Prints with the Resident Engineer and the Design Consultant. When authorized, complete mark-up of a full set of corrected Mylar's (reproducible) of the Contract Drawings.



1. Incorporate changes and additional information previously marked on Record Prints. Erase, redraw, and add details and notations where applicable.
2. Refer instances of uncertainty to Resident Engineer for resolution.
3. Print the As-Built Contract Drawings and Shop Drawings for use as Record Transparencies as described in Sub-Section 1.5.

2.2 RECORD SPECIFICATIONS, ADDENDA AND CHANGE ORDERS:

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Record the name of manufacturer, supplier, installer, and other information necessary to provide a record of selections made.
 4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
 5. Note related Change Orders and Record Drawings where applicable.
 6. Upon completion of mark-up submit two (2) complete copies of the marked-up Record Specifications to the Commissioner.

2.3 RECORD PRODUCT DATA:

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 3. If possible, a Change Order proposal should include resubmitting updated Product Data. This eliminates the need to mark up the previous submittal.
 4. Note related Change Orders and Record Drawings where applicable.
 5. Upon completion of mark-up submit to the Commissioner two (2) sets of the marked-up Record Product Data.
 6. Where Record Product Data is required as part of Maintenance Manuals, submit marked-up Product Data as an insert in the manual instead of submittal as record Product Data.

2.4 RECORD SAMPLE SUBMITTAL:

- A. Prior to the date of Substantial Completion, each Contractor shall meet with the Resident Engineer at the site to determine which of the Samples maintained during the construction period shall be transmitted to the Commissioner for record purposes.
- B. Comply with the Resident Engineer's instructions for packaging, identification marking and delivery to the DDC. Dispose of other samples as specified for disposal of surplus and waste material.

2.5 OPERATING AND MAINTENANCE MANUALS:

- A. Each Contractor shall provide preliminary and final versions of Operating and Maintenance Manuals required for those systems, equipment and materials listed in other Sections of the Project Specifications.



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- B. Format: Prepare and assemble Operation and Maintenance Manuals in heavy-duty, 3-ring, hardback loose leaf binders in the form of an instructional manual. All binders for each discipline shall be the same color. When multiple binders are used, correlate data into related consistent groupings. Binder front shall contain permanently attached labels displaying the following:
1. Heading:
The City of New York
Department of Design and Construction
Division of Public Buildings
 2. Capital Budget Project Number (FMS ID)
 3. Name and Location of Project
 4. Contractor's name and Address
 5. Dates of the work covered by the contents of the Project Manual.
 6. Binder spine shall display Project Number (FMS ID) and date of completion.
- C. Organization: Include a section in the directory for each of the following:
1. List of documents
 2. List of systems
 3. List of equipment
 4. Table of contents
- D. Arrange content by systems under Specification Section numbers and sequence of Table of Contents of the Project manual. Provide tabbed flyleaf for each separate product, equipment and/or system/subsystem with typed description of product and major component parts of equipment.
- E. Safety warnings or cautions shall be visibly highlighted within each maintenance procedure. Use of such highlights shall be limited to only critical items and shall not be used in an excessive manner which would reduce their effectiveness.
- F. For each product or system, list names, addresses and telephone numbers of Subcontractors and Suppliers, including local source of supplies and replacement parts. Vendors and Supplier listings are to include names, addresses and telephone numbers, including nearest field service telephone numbers.
- G. Where contents of the manual include any manufacturer's catalog pages, clearly indicate the precise items and options included in the installation and delete all manufacturers' data regarding products not included in the installation.
- H. All material within manuals shall be new. Copies used for prior submittals or used in construction shall not be used.
- I. Submit preliminary and final manual editions to the Commissioner according to the approved progress schedule.
- J. Manuals shall present all technical material to the greatest extent possible, with respect to text, tabular matter and illustrations. Illustrations shall preferably consist of line drawings. All applicable drawings shall be included. If available, color photograph prints may be included.
- K. Preliminary manual editions shall be as technically complete as the final manual edition. All illustrations shall be in final forms.
- L. Final manual editions shall be technically accurate and complete and shall represent all "as-built" systems, pieces of equipment, or materials, which have been accepted by the Commissioner. All illustrations, text and tabular material shall be in final form. All shop drawings shall be included as specified in individual Specification Sections.
- M. Building products, applied materials, and finishes: Include product data, with catalog number, size, composition, and color texture designations. Where applicable, provide information for re-ordering custom manufactured products.



- N. Instructions for care and maintenance: Include manufacturers' recommendations for cleaning agents and methods, and recommended schedule for cleaning and maintenance.
 - O. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical compositions, and details of installation. Provide recommendations for inspections, maintenance, and repair.
 - P. Additional Requirements: Specified in individual Specification Sections.
- 2.6 **DEMONSTRATION AND ORIENTATION DVD:**
- A. Commissioned and Non-Commissioned Projects: Each Contractor shall submit final version of applicable Demonstration and Orientation DVD recordings in compliance with Section 01 79 00, DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION, and Section 01 91 13 GENERAL COMMISSIONING REQUIREMENTS.
- 2.7 **GUARANTEES AND WARRANTIES:**
- A. SCHEDULE B – Requirements for guarantees and warranties for the Project are set forth in Schedule B, which is included as part of the Addendum.
 - B. FORM – For all guarantee requirements set forth in Schedule B, each Contractor shall provide a written guaranty, in the form set forth herein.
 - C. Submit fully executed and signed manufacturers' Warranties as listed in the Project Specifications and outlined in Schedule B of the Addendum. Refer to Section 01 77 00, CLOSEOUT PROCEDURES for submittal requirements.



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GUARANTY

DDC PROJECT # _____

PROJECT DESCRIPTION _____

CONTRACT # _____

SPECIFICATION SECTION # AND TITLE _____

GUARANTY TO BE IN EFFECT FROM _____

TO _____

The Contractor hereby guarantees that the work specified under the above section of the aforesaid Contract will be free from defects of material and/or workmanship, for the period indicated above.

The Contractor also guarantees that it will promptly repair, restore, rebuild or replace whichever may be deemed necessary by the City, any or all defective material or workmanship of the aforementioned section, that may appear within the guaranty period and any finished work to which damage may occur because of such defects, to the satisfaction of the City and without any cost or expense to the City.

The Contractor hereby agrees to pay to the City the cost of the repairs or replacements should the City make the same because of the failure of the Contractor to do so.

Contractor

By

Subscribed and sworn to before me this
day of _____, year _____

Notary Public



2.8 WASTE DISPOSAL DOCUMENTATION:

- A. Certify and deliver to the Commissioner all documentation including reports, receipts, certificates, records etc. for the collection, handling, storage, classification, testing, transportation, recycling and/or disposal of all Non-Hazardous Construction Waste as required by Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL, and Hazardous Waste as required by other Project Specification Sections. Certify compliance with all applicable governing laws, codes, rules and regulations.

2.9 MISCELLANEOUS RECORD DOCUMENTS:

- A. Refer to other Project Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Prior to Final Acceptance, complete miscellaneous records and place in good order, properly identified and bound or otherwise organized to allow for use and reference.
- B. Submit three (3) copies of each document to the Commissioner or as otherwise directed by the Commissioner.

PART III – EXECUTION

3.1 RECORDING AND MAINTENANCE:

- A. Recording: Maintain one copy of each submittal during the construction period for Contract Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Contract Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to the Contract Record Documents for the Resident Engineer's reference during normal working hours.

END OF SECTION 01 78 39



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NO TEXT

CONTRACT RECORD DOCUMENTS
01 78 39- 10



SECTION 01 79 00
DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SUB-SECTION 01 79 00

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This Section includes administrative and procedural requirements, when set forth in sections of the Project Specifications, for instructing facility's personnel, including the following:
1. Demonstration of operation of systems, subsystems, and equipment.
 2. Owner's Pre-Acceptance Orientation in operation and maintenance of systems, subsystems, and equipment.
 3. Demonstration and Orientation videotapes.
- B. Each Contractor shall provide the services of equipment manufacturers orientation specialists experienced in the type of equipment to be demonstrated.
- C. Separate Orientation sessions shall be conducted for mechanical operations and maintenance personnel and for electronic and electrical maintenance personnel.
- D. Commissioning: Refer to the Addendum to identify whether this project is to be Commissioned. For Commissioned projects each Contractor shall provide Demonstration and Orientation as described in this section and cooperate with the Commissioning Authority/Agent (CxA) to implement Commissioning requirements as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS.

1.3 RELATED SECTIONS: include without limitation the following:

- A. Section 01 10 00 SUMMARY
- B. Section 01 33 00 SUBMITTAL PROCEDURES
- C. Section 01 77 00 CLOSEOUT PROCEDURES
- D. Section 01 78 39 CONTRACT RECORD DOCUMENTS
- E. Section 01 91 13 GENERAL COMMISSIONING REQUIREMENTS
- F. Specific requirements for Demonstration and Orientation indicated in other sections of the Project Specifications

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.



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- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.5

SUBMITTALS:

- A. Instruction Program: Submit three (3) copies of outline of instructional program for Demonstration and Orientation including a schedule of proposed dates, times, length of instruction time, and instructors' names for each instruction module to the Commissioner for approval no less than thirty (30) days prior to the date the proposed instruction is to take place. Include learning objective and outline for each instruction module.
1. At completion of instruction, submit three (3) complete instruction manual(s) and three (3) applicable DVD recording(s) to the Commissioner for the facility's and City's use.
- B. Qualification Data: For facilitator, instructor and Videographer.
- C. Attendance Record: For each instruction module, submit list of participants and length of instruction time.
- D. Evaluations: For each participant and for each orientation module, submit results and documentation of performance-based test.
- E. Submit all final orientation material to the Resident Engineer a minimum of fourteen (14) days prior to the scheduled instruction.
- F. Demonstration and Orientation Recordings:
1. Non-Commissioned Projects:
 - a. Each Contractor shall submit to the Commissioner three (3) copies of Demonstration and Orientation DVD (Digital Video Disk) recordings within seven (7) days of end of each instruction module.
 - b. Identification: On each copy, provide an applied label with the following information:
 - 1) Project Contract I.D. Number
 - 2) Project Contract Name
 - 3) Name of Contractor
 - 4) Name of Design Consultant
 - 5) Name of Construction Manager as applicable
 - 6) Date recorded.
 - 7) Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - 8) Table of Contents including list of systems covered.
 - c. Transcript: Prepared on 8-1/2-by-11-inch paper, punched and bound in heavy-duty, 3-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding DVD recording. Include name of Project and date of recording on each page.
 2. Commissioned Projects:
 - a. Demonstration and Orientation DVD recordings for Commissioned projects will be recorded by each applicable Contractor in accordance with Sub-Section 1.5F and Sub-



Section 3.2B herein. Each Contractor performing Demonstration and Orientation shall cooperate with the CxA in the recording of each Demonstration and Orientation module.

1.6 QUALITY ASSURANCE:

- A. Facilitator Qualifications: A firm or individual experienced in instructing or educating maintenance personnel in an orientation program similar in content and extent to that indicated for this Project, and whose work has resulted in instruction or education with a record of successful learning performance.
- B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 01 40 00, QUALITY REQUIREMENTS, experienced in operation and maintenance procedures and orientation/instruction.
- C. Videographer Qualifications: A professional Videographer who has experience with instruction and construction projects.
- D. Pre-instruction Conference: Schedule with the Resident Engineer a conference at Project site to comply with requirements in Section 01 31 00, PROJECT MANAGEMENT AND COORDINATION. Review methods and procedures related to demonstration and orientation instruction including, but not limited to, the following:
 - 1. Inspect and discuss locations and other facilities required for instruction.
 - 2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
 - 3. Review required content of instruction.
 - 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.7 COORDINATION:

- A. Coordinate instruction schedule with the Resident Engineer and facility's operations. Adjust schedule as required to minimize disrupting facility's operations.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of orientation instruction modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by the Commissioner.

PART II – PRODUCTS

2.1 INSTRUCTION PROGRAM:

- A. Program Structure: Develop an instruction program that includes individual orientation modules for each system and equipment not part of a system, as specified and required by individual Specification Sections.
- B. Orientation Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:



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1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function including auxiliary equipment and systems.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Operations manuals.
 - c. Maintenance manuals.
 - d. Project Record Documents.
 - e. Identification systems.
 - f. Warranties
3. Emergencies: Include the following, as applicable:
 - a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
4. Operations: Include the following, as applicable:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - l. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
5. Adjustments: Include the following:
 - a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
6. Troubleshooting: Include the following:
 - a. Diagnostic instructions.
 - b. Test and inspection procedures.



7. Maintenance: Include the following:
 - a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning
 - e. Procedures for preventive maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.
 - h. Housekeeping practices
8. Repairs: Include the following:
 - a. Diagnosis instructions.
 - b. Repair instructions.
 - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - d. Instructions for identifying parts and components.
 - e. Review of spare parts needed for operation and maintenance.

PART III – EXECUTION

3.1 INSTRUCTION:

- A. Facilitator: Each Contractor performing Demonstration and Orientation shall engage a qualified facilitator to prepare instruction program and instruction modules, to coordinate instructors, and to coordinate between Contractor and the Resident Engineer for the number of participants, instruction times, and location.
- B. Each Contractor shall engage qualified instructors to instruct facility's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
- C. Scheduling: Schedule instruction with the Resident Engineer at mutually agreed times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 1. Schedule orientation instruction with the Resident Engineer with at least fourteen (14) days' advance notice.
- D. Evaluation: At conclusion of each orientation instruction module, assess and document each participant's mastery of module(s) by use of an oral, a written or a demonstration performance-based test.
- E. Cleanup: Collect and remove used and leftover educational materials from project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial orientation use.

3.2 DEMONSTRATION AND ORIENTATION RECORDINGS:

- A. Non-Commissioned projects:
 1. Each Contractor performing Demonstration and Orientation shall engage a qualified commercial Videographer to record demonstration and orientation instruction sessions. Record each orientation instruction module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
 2. At beginning of each orientation instruction module, record each chart containing learning objective and lesson outline.



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3. All recordings must be close captioned.
4. Recording Format: Provide high-quality DVD (Digital Video Disk) format.
5. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of demonstration and orientation instruction. Display continuous running time.
6. Narration: Describe scenes on the recording by audio narration by microphone while recording or by dubbing audio narration off-site after. Include description of items being viewed. Describe vantage point, indicating location, direction (by compass point), and elevation or story of construction.
7. Transcript: Provide a typewritten transcript of the narration. Display images and running time captured from opposite the corresponding narration segment.

B. Commissioned Projects:

Refer to the Addendum to determine if project is to be Commissioned.

1. The Commissioning Authority/ Agent (CxA) under separate contract with the City of New York will assess and comment on the adequacy of the Orientation Instruction sessions by reviewing the Orientation and Instruction program and agenda provided by each Contractor. The provider of the Orientation program will videotape the sessions and provide a copy to the CxA for final review and comments. If necessary, Contractor shall edit DVD recording per CxA comments.

END OF SECTION 01 79 00



**SECTION 01 81 13
SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS**

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SUB SECTION 01 81 13

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

A. LEED BUILDING - GENERAL REQUIREMENTS:

The City of New York is committed to implementing good environmental practices and procedures which include achieving a LEED™ Green Building rating. Specific project requirements related to this goal are listed in the applicable paragraphs of this section of the General Conditions. Each Contractor shall ensure that these requirements as defined in the sections below and in related sections of the Contract Documents, are implemented to the fullest extent. Substitutions, or other changes to the work proposed by each Contractor or its Subcontractors, shall not be allowed if such changes compromise the stated LEED BUILDING criteria.

B. This Section includes:

1. Definitions
2. LEED Provisions
3. LEED Building Submittals
4. LEED Building Submittal Requirements
5. LEED Action Plan

1.3 RELATED SECTIONS: Include without limitation the following:

- | | | |
|----|---------------------|--|
| A. | Section 01 74 19 | CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL |
| B. | Section 01 81 13.13 | VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES,
SEALANTS, PAINTS AND COATINGS |
| C. | Section 01 81 19 | INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS |
| D. | Section 01 91 13 | GENERAL COMMISSIONING REQUIREMENTS |

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Agrifiber Products: Products derived from recovered agricultural waste fiber from sources such as cereal straw, sugarcane bagasse, sunflower husk, walnut shells, coconut husks, and agricultural prunings, processed and mixed with resins to produce panels with characteristics similar to composite wood.



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- C. **Composite Wood:** Products composed of wood or plant particles or fibers bonded by a synthetic resin or binder to produce panels such as plywood, particleboard, and medium density fiberboard (MDF). Does not include hardboard, structural panels, glued laminated timber, prefabricated wood I-joists, or finger-jointed lumber.
- D. **Design Consultant:** "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.
- E. **Forest Stewardship Council (FSC) Certified Wood:** Wood-based materials and products certified in accordance with the Forest Stewardship Council's principles and criteria.
- F. **LEED:** The Leadership in Energy & Environmental Design rating system developed by the United States Green Building Council.
- G. **Rapidly Renewable Materials:** Materials made from agricultural products that are typically harvested within a ten-year or shorter cycle. Rapidly renewable materials include products made from bamboo, cotton, flax, jute, straw, sunflower seed hulls, vegetable oils, or wool.
- H. **Regionally Manufactured Materials:** Materials that are manufactured within a radius of 500 miles from the Project location. Manufacturing refers to the final assembly of components into the building product that is installed at the Project site.
- I. **Regionally Extracted, Harvested, or Recovered Materials:** Materials which are extracted, harvested, or recovered and manufactured within a radius of 500 miles from the Project site.
- J. **Recycled Content:** The percentage by weight of constituents that have been recovered or otherwise diverted from the solid waste stream, either during the manufacturing process (pre-consumer), or after consumer use (post-consumer).
 - 1. Spills and scraps from the original manufacturing process that are combined with other constituents after a minimal amount of reprocessing for use in further production of the same product are not recycled materials.
 - 2. Discarded materials from one manufacturing process that are used as constituents in another manufacturing process except mechanical and electrical components are pre-consumer recycled materials.
 - 3. "Pre-consumer" may also be referred to as "post-industrial".
- K. **Solar Reflectance Index (SRI):** A measure of a material's ability to reflect solar heat, as shown by a small temperature rise. It is defined so that a standard black (reflectance 0.05, emittance 0.90) is equal to 0, and a standard white (reflectance 0.80, emittance of 0.90) is equal to 100.
- L. **Volatile Organic Compound (VOC):** Any compound of carbon (excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate) which vaporizes (becomes a gas) and participates in atmospheric photochemical reactions, as specified in Part 51.00 of Chapter 40 of the U.S. Code of Federal Regulations, at normal room temperatures. For the purposes of this specification, formaldehyde and acetaldehyde are considered to be VOCs.



1.5 LEED PROVISIONS:

- A. Refer to the Addendum for the LEED rating to be achieved for this project. The provisions to achieve this LEED rating are integrated within the project construction documents and specifications. Each Contractor is specifically directed to the "LEED BUILDING Performance Criteria" and "LEED BUILDING Submittals" sections within the contract specification. Additional LEED requirements are met through aspects of the project design, including material and equipment selections, which may not be specifically identified as LEED BUILDING requirements. Compliance with the requirements needed to obtain LEED prerequisites and credits will be used as one criterion to evaluate substitution requests.

1.6 LEED BUILDING SUBMITTALS:

- A. Scope: LEED BUILDING submittals are required for all installed materials included in General Construction work. LEED BUILDING Submittals are only required for field-applied adhesives, sealants, paints and coatings included in Plumbing, Mechanical and Electrical work. Submit all required LEED BUILDING submittals in accordance with Section 01 33 00, SUBMITTAL PROCEDURES.
- B. Applicability: The extent of the LEED BUILDING Submittals varies depending on the specification section. Applicable LEED BUILDING Submittals are listed under the "LEED BUILDING Submittals" heading in each specification section. The detailed requirements for the LEED BUILDING Submittals are defined in Item C below.
- C. Detailed Requirements: Sub-Sections 1.6 C.1 through 1.6 C.3 below defines the information and documents to be provided for each type of LEED BUILDING Submittal as identified in the LEED Submittal Requirements of each specification section:
1. ENVIRONMENTAL BUILDING MATERIALS CERTIFICATION FORM (EBMCF): Information to be supplied for this form (blank sample copy attached at end of this Section to be modified as appropriate to the project) shall include some or all of the following items, as identified in the LEED Submittal Requirements of each specification section:
 - a. Cost breakdowns for the materials included in each Contractor or sub-contractor's scope of work. Cost reporting shall include itemized material costs (excluding each Contractor's labor, equipment, overhead and profit).
 - b. The percentages (by weight) of post-consumer and/or post-industrial recycled content in the supplied product(s).
 1. For each product with recycled content, also indicate the total recycled content value ($\frac{1}{2} \times \text{pre-consumer percentage} \times \text{product value} + 1 \times \text{post-consumer percentage} \times \text{product value} = \text{total recycled content value}$).
 2. See additional requirements for concrete below.
 - c. Identification (Yes/No) of materials manufactured within 500 miles of the project site AND containing raw materials harvested or extracted within 500 miles of the project site.
 - 1) Indicate the percentage by weight, relative to the total weight of the product, that meets these criteria.
 - 2) Indicate the point of harvest/extraction/recovery of regional raw materials, the point of final assembly of regional manufactured products, and the distance from each point to the project site.
 - d. Volatile Organic Compound (VOC) content of all field-applied adhesives, sealants, paints, and coatings, listed in grams/liter or lbs./gallon, less water.
 - 1) For detailed requirements refer to Section 01 81 13.13 VOC LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS.
 - e. The amount of "Forest Stewardship Council (FSC) Certified" wood products if used in the Project.
 - 1) Record only new FSC-certified wood products. Do not record reclaimed, salvaged, or recycled FSC-certified wood products.



- 2) Reclaimed, salvaged, or recycled FSC-certified wood may be recorded as post-consumer recycled content.
 - f. The amount of Rapidly Renewable materials if used in the Project.
 - 1) Indicate the type of rapidly renewable material used, and the percentage by weight, relative to the total weight of the product, that consists of rapidly renewable material.
 - g. The percentage (by weight), relative to the total weight of cementitious materials, of supplementary cementitious materials or pozzolans such as fly ash used in each concrete mix used in the Project.
 - 1) For each concrete mix, provide a complete breakdown of all components, by weight and by cost.
 - h. Identification (Yes/No) of composite wood or agrifiber products used in the project that are free of added urea-added formaldehyde resins.
 - i. Identification (Yes/No) of flooring products used in the project that have Carpet and Rug Institute (CRI) Green Label or Green Label Plus certification, or Resilient Floor Covering Institute FloorScore certification.
 - 1) Untreated solid wood flooring, and mineral-based flooring products such as tile, masonry, terrazzo, and cut stone that have no organic-based coatings or sealants, are excluded from this requirement.
 - j. The EBMCF shall record the above information only for those materials or products permanently installed in the project. The EBMCF shall record VOC content, composite and agrifiber products, and CRI or FloorScore ratings only for those materials or products permanently installed within the weather barrier of the LEED building.
2. **EBMCF BACK-UP DOCUMENTATION:** These documents are used to validate the information provided on the EBMCF (except cost data). For each material listed on the EBMCF, provide documentation to certify the material's LEED BUILDING attributes, as applicable:
- a. **RECYCLED CONTENT:** Provide published product literature or letter of certification on the manufacturer's letterhead certifying the amounts of post-consumer and/or post-industrial content.
 - b. **REGIONAL MANUFACTURING AND REGIONAL RAW MATERIALS (WITHIN 500 MILES):** Provide published product literature or letter of certification on the manufacturer's letterhead indicating the city/state where the manufacturing plant is located, where each of the raw materials in the product were extracted, harvested or recovered and the distance in miles from the project site.
 - 1) If only some of the raw materials for a particular product or assembly originate within 500 miles of the project site, provide the percentage (by weight) that these materials comprise in the complete product.
 - c. **VOC CONTENT:** Provide Material Safety Data Sheets (MSDS) certifying the Volatile Organic Compound (VOC) content of the adhesive, sealant, paint, or coating products. VOC content is to be reported in grams/liter or lbs./gallon, less water. If the MSDS does not show the product's VOC content, this information must be provided through other published product literature from the manufacturer, or stated in a letter of certification from the product manufacturer on the manufacturer's letterhead.
 - d. **RAPIDLY RENEWABLE MATERIALS:** If used in the project, provide published literature or letter of certification on the manufacturer's letterhead certifying the percentage of each product that is rapidly renewable (by weight).
3. **PRODUCT CUT SHEETS:** Provide product cut sheets with each Contractor's or sub-contractor's stamp, confirming that the submitted products are the products installed in the Project.
4. **CRI GREEN LABEL PLUS CERTIFICATION:** For carpets and carpet cushions, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the products comply with the "Green Label Plus" IAQ testing program of the Carpet and Rug Institute of Dalton, GA.



5. **CERTIFICATION OF COMPOSITE WOOD OR AGRIFIBER RESINS:** For all composite wood, engineered wood and agrifiber products (including plywood, particleboard, and medium density fiberboard), provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the products do not contain added urea-formaldehyde resins.
6. **CERTIFICATION OF COMPOSITE WOOD OR AGRIFIBER LAMINATING ADHESIVES:** For all laminating adhesives used with composite wood, engineered wood and agrifiber products (e.g., adhesives used to laminate wood veneers to an engineered wood substrate), provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the adhesive products do not contain urea-formaldehyde.
7. **FSC-CERTIFIED WOOD:**
 - a. If used in the project, provide chain of custody documents and copies of invoices regarding wood products, including whether or not such wood product is FSC-certified.
 - b. If used in the project, for assemblies, provide the percentage (by cost and by weight) of the assembly that is FSC-certified wood.
 - c. If used in the project, for assemblies, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying the percentage that is FSC-certified wood.
8. **GREEN SEAL COMPLIANCE:** Provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the following product types comply with the VOC limits and chemical component restrictions developed by the Green Seal organization of Washington, DC:
 - a. Interior Architectural Paints and Coatings: refer to Green Seal standard GS-11 (1st edition, May 1993)
 - b. Anti-corrosive and Anti-rust paints: refer to Green Seal standard GC-03 (2nd Edition, January 1997)
 - c. Aerosol Adhesives: refer to Green Seal standard GS-36 (1st edition, October 2000)
9. **HIGH ALBEDO PAVING AND WALKWAY MATERIALS:** For paving and walkway materials made from concrete or brick provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying a minimum Solar Reflectance Index (SRI) value of 29. SRI values shall be calculated according to ASTM E 1980. Reflectance shall be measured according to ASTM E 903, ASTM E 1918, or ASTM C 1549. Emittance shall be measured according to ASTM E 408 or ASTM C 1371.
10. **HIGH ALBEDO ROOFING MATERIALS:** For exposed roofing membranes, pavers, and ballast products, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying the following minimum Solar Reflectance Index (SRI) values:
 - a. 78 for low-sloped roofing applications (slope \leq 2:12)
 - b. 29 for steep-sloped roofing applications (slope $>$ 2:12)

SRI values shall be calculated according to ASTM E.1980. Reflectance shall be measured according to ASTM E 903, ASTM E 1918, or ASTM C 1549. Emittance shall be measured according to ASTM E 408 or ASTM C 1371.

Vegetated roof surfaces are exempt from the SRI criteria.
11. **LOW MERCURY LAMPS:** For all fluorescent, compact fluorescent, and HID lamps installed in the project, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying:
 - a. The mercury content or content range per lamp in milligrams or picograms;
 - b. The design light output per lamp (light at 40% of a lamp's useful life) in lumens; and
 - c. The rated average life of the lamp in hours.



In addition, provide the total number of each lamp type installed in the project:

12. **FLOORSCORE CERTIFICATION:** For all hard surface flooring, including vinyl, linoleum, laminate flooring, wood flooring, ceramic flooring, rubber flooring, and wall base, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the products comply with the current FloorScore standard requirements.
13. **CONCRETE:** Provide concrete mix design for each mix, designated by a distinct identifying code or number and signed by a Professional Engineer licensed in the state in which the concrete manufacturer or supplier is located.
14. **INTERIOR LIGHTING FIXTURES:** For each lighting fixture type installed within the building's weather barrier, provide manufacturer's cut sheets indicating the following:
 - a. Fixture power in watts.
 - b. Initial lamp lumens.
 - c. Photometric distribution data.
 - d. Dimming capability, in range of percentages.
15. **EXTERIOR LIGHTING FIXTURES:** For each lighting fixture type installed on site, provide manufacturer's cut sheets indicating the following:
 - a. Fixture power in watts.
 - b. Initial lamp lumens.
 - c. Photometric distribution data.
 - d. Range of field adjustability, if any.
 - e. Warranty of suitability for exterior use.
16. **ALTERNATIVE TRANSPORTATION:** Provide manufacturer's cut sheets and/or shop drawings for the following items installed on site:
 - a. Bike racks, including total number of bicycle slots provided.
 - b. Signage indicating parking spaces reserved for electric or low-emitting vehicles and for carpools/vanpools, including total number of signs.
17. **WATER CONSERVING FIXTURES:** For all water consuming plumbing fixtures and fittings, provide manufacturer's cut sheets showing maximum flow rates and/or flush rates.
18. **ENERGY SAVING APPLIANCES:** Provide manufacturer's cut sheets and published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying the product's rating under the U.S. EPA/DOE Energy Star program, for all of the following:
 - a. Appliances (i.e., refrigerators, dishwashers, microwave ovens, televisions, clothes washers, clothes dryers, chilled water dispensers).
 - b. Office equipment (i.e., copy machines, fax machines, plotters/printers, scanners, binding and publishing equipment).
 - c. Electronics (i.e., servers, desktop computers, computer monitor displays, laptop computers, network equipment).
 - d. Commercial food service equipment
19. **GLAZING:** For glazing in any windows, doors, storefront and window wall systems, curtainwall systems, skylights, and partitions, provide manufacturer's cut sheets indicating the following:
 - a. Glazed area.
 - b. Visible light transmittance.
 - c. Solar heat gain coefficient.
 - d. Fenestration assembly u-factor.
20. **VENTILATION:** Provide manufacturer's cut sheets for the following:
 - a. Carbon dioxide monitoring systems, if any, installed to measure outside air delivery.
 - b. Air filters: for detailed requirements refer to Section 01 81 19 INDOOR AIR QUALITY REQUIREMENTS.
21. **REFRIGERATION:** For all refrigeration equipment, provide manufacturer's cut sheets indicating the following:
 - a. Equipment type.



- b. Equipment life. Default values specified by the 2007 ASHRAE Applications Handbook will be used unless otherwise demonstrated by the manufacturer's guarantee and an equivalent long-term service contract.
- c. Refrigerant type.
- d. Refrigerant charge in pounds of refrigerant per ton of gross cooling capacity.
- e. Tested refrigerant leakage rate, in percent per year. A default rate of 2% will be used unless otherwise demonstrated by test data.
- f. Tested end-of-life refrigerant loss, in percent. A default rate of 10% will be used unless otherwise demonstrated by test data.

1.7 LEED BUILDING SUBMITTAL REQUIREMENTS:

- A. The LEED BUILDING submittal information shall be assembled into one package per each Contractor's specification section(s) (or per subcontractor), and submitted in accordance with Section 01 33 00, SUBMITTAL PROCEDURES. Incomplete or inaccurate LEED BUILDING submittals may be used as the basis for rejecting the submittals of products or assemblies.

1.8 LEED ACTION PLANS:

- A. Construction Waste Management Plan- Refer to Section 01 74 19, Construction Waste Management and Disposal for detailed submittal requirements.
- B. Construction IAQ Management Plan- Refer to Section 01 81 19, Indoor Air Quality Requirements for LEED Buildings, for detailed submittal requirements.
- C. Erosion and Sedimentation Control Plan (ESC Plan):
 - 1. The Plan shall be in accordance with the New York State Department of Environmental Conservation (NYSDEC) or the 2003 EPA Construction General Permit, whichever is more stringent.
 - 2. The Plan shall be submitted in accordance with Section 01 33 00, SUBMITTAL PROCEDURES.
 - 3. Detailed requirements: ESC Plan
 - i. Include the Stormwater Pollution Prevention Plan, if required.
 - ii. Identify the party responsible for Plan monitoring and documentation. The party must be regularly on site.
 - iii. Describe all site work that will be implemented on the project.
 - iv. Provide site plan with location of ESC measures, including, but not limited to, stormwater quantity controls, stormwater quality controls, stabilized construction entrances, washdown areas, and inlet/catch basin protection.
 - v. Describe the inspection and maintenance of the ESC measures. Provide a construction schedule indicating weekly site review.
 - vi. Describe reporting and documentation measures.
 - 4. Detailed requirements: ESC Measures
 - 5. Submittal requirements: ESC Tracking Log
 - a. Note date of major rain events, describe damage, describe any repairs or maintenance performed, and note responsible party.
 - b. Note date and findings of weekly site review, describe any repairs or maintenance performed, and note responsible party.
 - c. Submit monthly.
 - 6. Implementation
 - a. The GC Contractor shall implement the ESC Plan, coordinate the Plan with all affected trades, and designate one individual as the Erosion and Sedimentation Control



- Representative, who will be responsible for communicating the progress of the Plan with the Commissioner on a regular basis, and for assembling the required LEED documentation.
- b. Each Contractor shall be responsible for the provision, maintenance, and repair of all ESC measures.
 - c. Demonstration. Each Contractor shall provide on-site instruction of proper construction practices required to prevent erosion and sedimentation.
 - d. Meetings. Urgent or ongoing ESC issues shall be discussed at weekly on-site job meetings.

1.9 QUALITY ASSURANCE:

- A. Each Contractor shall implement all LEED Action Plans, coordinate the Plans and LEED Building Submittals with all affected trades, and designate one individual as the Sustainable Construction Representative at no additional cost to the City of New York, who will be responsible for communicating the progress of LEED activities with the Commissioner on a regular basis, and for assembling the required LEED documentation.
- B. Responsibilities of Contractor's Subcontractors: Each Contractor shall be responsible for his/her subcontractors complying with the LEED Action Plans and for providing required LEED documentation as required for the project.
- C. Distribution and Compilation: The GC Contractor shall be responsible for distributing the EBMCF and any other forms or templates required for each Contractor and his/ her subcontractors to record LEED documentation. Each Contractor shall also be responsible for collecting and compiling EBMCF information into packages as described in Section 01 33 00 SUBMITTAL PROCEDURES.
- D. Meetings: Sustainable design and construction issues shall be discussed at the following meetings:
 1. Demolition kick-off meeting
 2. Construction kick-off meeting
 3. Construction kick-off meeting for LEED (independent meeting)
 4. Weekly job-site progress and coordination meetings
- E. Closeout meeting

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 81 13



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

ENVIRONMENTAL BUILDING MATERIALS CERTIFICATION FORM

Contractor Name: _____ Project Name: _____
 Contractor Contact: _____ Project I.D.: _____
 Telephone Number: _____ Project Location: _____

Product/Manufacturer	Recycled Content		Regional ⁴		Rapidly Renewable ⁷		*VOC content listed	*VOC content allowed	Flooring ⁹	*Wood	FSC Certified ¹¹ (% by wt)	
	Material Cost ¹	Pre-Consumer (% by wt) ²	Post-Consumer (% by wt) ³	Total % (1/2 Pre + Post)	Location & Distance to Extractions ⁵	Location & Distance to Manufacture ⁶						Extracted & Manuf. (% by wt)

¹Material Cost: As it appears on the manufacturer's or distributor's invoice to the Contractor or subcontractor. Does not include labor or equipment costs associated with installation.
²Pre-Consumer Recycled Content: Industrial/manufacturing waste material (e.g., fly-ash and synthetic gypsum, both waste products from coal burning electricity plants) diverted from landfill and incorporated into a finished product. Scrap raw materials that can be reused in the same manufacturing process from which they are recovered are not considered Pre-Consumer Recycled Content.
³Post-Consumer Recycled Content: Material or product that has served its intended consumer use (e.g., an empty plastic bottle) and has been diverted from landfill and incorporated into a finished product.
⁴Regional: Refers to a material/product that is BOTH extracted AND manufactured within 500 miles of the Project site. Record this information ONLY for materials/products meeting BOTH of these criteria.
⁵Extraction: Refers to the location from which the raw resources used in a building product are extracted, harvested, or recovered.
⁶Manufacture: Refers to the location of the final assembly of components into a building product that is furnished and installed by the Contractor.
⁷Rapidly Renewable: Refers to materials/products derived from agricultural products that are typically harvested within a ten-year or shorter cycle.
⁸VOC Content: The quantity of volatile organic compounds contained in adhesives, sealants, paints and architectural coatings. Reported in grams/liter or lbs/gallon, less water.
⁹Flooring: For carpet, indicate Carpet and Rug Institute (CRI) Green Label Plus certification. For carpet cushion, indicate CRI Green Label certification. For all flooring except unfinished/un-treated wood and mineral-based flooring (tile, masonry, terrazzo, cut stone) without organic-based coatings or sealants, indicate Resilient Floor Covering Institute FloorScore rating. VOC limits for adhesives, sealants, etc. still apply.
¹⁰Added Urea Formaldehyde: Applies to composite wood and aggrifiber products only (plywood, particleboard, MDF, OSB, wheatboard, strawboard). Resins or binders with added urea formaldehyde are prohibited.
¹¹FSC Certified: Certification from the Forest Stewardship Council. This column is only applicable to wood products.
 *Applies only to materials/products installed within the weather barrier.

Contractor Certification: _____
 I, _____ a duly authorized representative of _____ (the Contractor) hereby certify that the material information contained herein is an accurate representation of the material qualifications to be provided by the Contractor as components of the final building construction. Furthermore, I understand that any change in such qualifications during the purchasing period will require prior written approval from the Commissioner.
 Signature of Authorized Representative: _____ Date: _____

NO TEXT



SECTION 01 81 13.13
VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS FOR LEED BUILDINGS

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 81 13.13

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This Section includes requirements for volatile organic compound (VOC) content in adhesives, sealants, paints and coatings used for the project.
- B. All sections in the Project Specifications with adhesives, sealant or sealant primer applications, paints and coatings shall follow all requirements of this section. In the event of any conflict or inconsistency between this section and the Specifications regarding adhesives, sealant or sealant applications, paints and coatings, the requirements set forth in this Section shall prevail.
- C. This Section includes:
1. General Requirements
 2. References
 3. VOC Requirements for Interior Adhesives
 4. VOC Requirements for Interior Sealants
 5. VOC requirements for Interior Paints
 6. VOC requirements for Interior Coatings
 7. Submittals

1.3 RELATED SECTIONS: Include without limitation the following:

- | | | |
|----|------------------|--|
| A. | Section 01 10 00 | SUMMARY |
| B. | Section 01 31 00 | PROJECT MANAGEMENT AND COORDINATION |
| C. | Section 01 32 00 | CONSTRUCTION PROGRESS DOCUMENTATION |
| D. | Section 01 33 00 | SUBMITTAL PROCEDURES |
| E. | Section 01 73 00 | EXECUTION |
| F. | Section 01 77 00 | CLOSEOUT PROCEDURES |
| G. | Section 01 78 39 | CONTRACT RECORD DOCUMENTS |
| H. | Section 01 81 13 | SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS |
| I. | Section 01 81 19 | INDOOR AIR QUALITY FOR LEED BUILDINGS |

1.4 DEFINITIONS:

- A. **ADHESIVE:** Any substance used to bond one surface to another by attachment. Includes adhesive primers and adhesive bonding primers.
1. **Aerosol Adhesive:** Any adhesive packaged as an aerosol with a spray mechanism permanently housed in a non-refillable can designed for hand-held application without the need for ancillary equipment.



- B. **CARCINOGEN:** A chemical listed as a known, probable, reasonably anticipated, or possible human carcinogen by the International Agency for Research on Cancer (IARC) (Groups 1, 2A, and 2B), the National Toxicology Program (NTP) (Groups 1 and 2), the U.S. Environmental Protection Agency (EPA) Integrated Risk Information System (IRIS) (weight-of-evidence classifications A, B1, B2, and C, carcinogenic, likely to be carcinogenic, and suggestive evidence of carcinogenicity or carcinogen potential), or the Occupational Safety and Health Administration (OSHA).
- C. **CLEAR WOOD FINISH:** Clear/semi-transparent coating applied to wood substrates to provide a transparent or translucent solid film.
1. **Lacquer:** Clear/semi-transparent coating formulated with cellulosic or synthetic resins to dry by evaporation without chemical reaction and provide a solid, protective film.
 2. **Sanding Sealer:** A sanding sealer that also meets the definition of a lacquer.
 3. **Varnish:** Clear/semi-transparent coating, excluding lacquers and shellacs, formulated to dry by chemical reaction on exposure to air. May contain small amounts of pigment.
- D. **COATING:** Liquid, liquefiable, or mastic composition that is converted to a solid adherent film after application to a substrate as a thin layer; and is used for decorating, protecting, identifying or to serve some functional purpose such as the filling or concealing of surface irregularities or the modification of light and heat radiation characteristics; and is intended for on-site application to interior or exterior surfaces of buildings. Does not include stains, clear finishes, recycled latex paint, specialty (industrial, marine or automotive) coatings or paint sold in aerosol cans.
- E. **FLOOR COATING:** Opaque coating applied to flooring. Excludes industrial maintenance coatings.
- F. **HAZARDOUS AIR POLLUTANT:** Any compound listed by the U.S. EPA in the Clean Air Act Section 112(b)(1) as a hazardous air pollutant.
- G. **MUTAGEN:** A chemical that meets the criteria for category 1, chemicals known to induce heritable mutations or to be regarded as if they induce heritable mutations in the germ cells of humans, under the Harmonized System for the Classification of Chemicals Which Cause Mutations in Germ Cells (United Nations Economic Commission for Europe, Globally Harmonized System of Classification and Labeling of Chemicals).
- H. **OZONE-DEPLETING COMPOUNDS:** A compound with an ozone-depletion potential greater than 0.1 (CFC 11=1) according to the U.S. EPA list of Class I and Class II Ozone-Depleting Substances.
- I. **PAINT:** A pigmented coating. For the purposes of this specification, paint primers are considered to be paints.
1. **Flat Coating or Paint:** Has a gloss of less than 15 (using an 85-degree meter) or less than 5 (using a 60-degree meter).
 2. **Non-Flat Coating or Paint:** Has a gloss of greater than or equal to 15 (using an 85-degree meter) or greater than or equal to 5 (using a 60-degree meter).
 3. **Non-Flat High-Gloss Coating or Paint:** Has a gloss of greater than or equal to 70 (using a 60-degree meter).
 4. **Anti-Corrosive / Rust Preventative Paint:** Coating formulated and recommended for use in preventing the corrosion of ferrous metal substrates.
- J. **PRIMER:** Coating that is formulated and recommended for one or more of the following purposes: to provide a firm bond between the substrate and a subsequent coating; to prevent a subsequent coating from being absorbed into the substrate; to prevent harm to a subsequent coating from materials in the substrate; or to provide a smooth surface for application of a subsequent coating.
- K. **REPRODUCTIVE TOXIN:** A chemical listed as a reproductive toxin (including developmental, female, and male toxins) by the State of California under the Safe Drinking Water and Toxic Enforcement Act of 1986 (California Code of Regulations, Title 22, Division 2, Subdivision 1, Chapter 3, Sections 1200, et. Seq.).
- L. **SANDING SEALER:** Clear/semi-transparent coating formulated to seal bare wood. Can be abraded to create a smooth surface for subsequent coatings. Does not include sanding sealers that are lacquers (see Clear Wood Finish above).



- M. **SEALANT:** Any material with adhesive properties, formulated primarily to fill, seal, or waterproof gaps or joints between surfaces. Includes sealant primers and caulks.
- N. **SHELLAC:** Clear or pigmented coating formulated solely with the resinous secretions of the lac beetle, thinned with alcohol and formulated to dry by evaporation without chemical reaction. Excludes floor applications.
- O. **STAIN:** Clear semi-transparent/opaque coating formulated to change the color but not conceal the grain pattern or texture of the substrate.
- P. **VOLATILE AROMATIC COMPOUND:** Any hydrocarbon compound containing one or more 6-carbone benzene rings, and having an initial boiling point less than or equal to 280 degrees Celsius measured at standard conditions of temperature and pressure.
- Q. **VOLATILE ORGANIC COMPOUND:** Any compound of carbon (excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate) which vaporizes (becomes a gas) and participates in atmospheric photochemical reactions, as specified in Part 51.00 of Chapter 40 of the U.S. Code of Federal Regulations, at normal room temperatures. For the purposes of this specification, formaldehyde and acetaldehyde are considered to be VOCs.
- R. **WATERPROOFING SEALER:** A coating that prevents the penetration of water into porous substrates.

1.5 GENERAL REQUIREMENTS:

- A. The City of New York is committed to implementing good environmental practices and procedures which include achieving a LEED Green building rating. Specific project requirements related to this goal which may impact this area of work are listed in the applicable paragraphs of this specification section. Each Contractor shall ensure that the requirements as defined in the sections below and in related sections of the Contract Documents, are implemented to the fullest extent. Substitutions, or other changes to the work proposed by each Contractor or their Subcontractors, shall not be allowed if such changes compromise the stated environmental goals.

1.6 REFERENCES:

- A. Rule 1168 – “Adhesive and Sealant Applications”, amended 7 January 2005: South Coast Air Quality Management District (SCAQMD), State of California, www.aqmd.gov
- B. Rule 1113 - “Architectural Coatings”, amended 9 July 2004: South Coast Air Quality Management District (SCAQMD), State of California, www.aqmd.gov
- C. Green Seal Standard GS-11- “Paints”, of Green Seal, Inc., Washington, DC, www.greenseal.org
- D. Green Seal Standard GC-03- “Anti-Corrosive Paints”, of Green Seal, Inc., Washington, DC, www.greenseal.org

1.7 VOC REQUIREMENTS FOR INTERIOR ADHESIVES, SEALANTS, PAINTS AND COATINGS:

- A. **GENERAL:** Unless otherwise specified herein, the VOC content of all interior adhesives, sealants, paints and coatings (herein referred to as “products”) shall not be in excess of **250 grams per liter**.
- B. No product shall contain any ingredients that are carcinogens, mutagens, reproductive toxins, persistent bioaccumulative compounds, hazardous air pollutants, or ozone-depleting compounds. An exception shall be made for titanium dioxide and, for products that are pre-tinted by the manufacturer, carbon black, which shall be less than or equal to 1% by weight of the product.
- C. No product shall contain the following:
 - 1. methylene chloride
 - 2. 1,1,1-trichloroethane
 - 3. benzene



4. toluene
5. ethylbenzene
6. vinyl chloride
7. naphthalene
8. 1,2-dichlorobenzene
9. di (2-ethylhexyl) phthalate
10. butyl benzyl phthalate
11. di-n-butyl phthalate
12. di-n-octyl phthalate
13. diethyl phthalate
14. dimethyl phthalate
15. isophorone
16. antimony
17. cadmium
18. hexavalent chromium
19. lead
20. mercury
21. formaldehyde
22. methyl ethyl ketone
23. methyl isobutyl ketone
24. acrolein
25. acrylonitrile

D. No product shall contain more than 1.0% by weight of sum total of volatile aromatic compounds.

1.8 VOC REQUIREMENTS FOR INTERIOR ADHESIVES:

- A. The volatile organic compound (VOC) content of adhesives, adhesive bonding primers, or adhesive primers used in this project shall not exceed the limits defined in Rule 1168 – "Adhesive and Sealant Applications" of the South Coast Air Quality Management District (SCAQMD), of the State of California.
- B. The VOC limits defined by SCAQMD are as follows. All VOC limits are defined in grams per liter, less water and less exempt compounds.
- C. For specified building construction related applications, the allowable VOC content is as follows:

a. Architectural Applications:

i. Indoor carpet adhesive	50
ii. Carpet pad adhesive	50
iii. Wood flooring adhesive	100
iv. Rubber floor adhesive	60
v. Subfloor adhesive	50
vi. Ceramic tile adhesive	65
vii. VCT and asphalt tile adhesive	50
viii. Drywall and panel adhesive	50
ix. Cove base adhesive	50
x. Multipurpose construction adhesive	70
xi. Structural glazing adhesive	100

b. Specialty Applications:

a. PVC welding	510
b. CPVC welding	490



c.	ABS welding	325
d.	Plastic cement welding	250
e.	Adhesive primer for plastic	550
f.	Contact Adhesive	80
g.	Special Purpose Contact Adhesive	250
h.	Structural Wood Member Adhesive	140
i.	Sheet Applied Rubber Lining Operations	850
j.	Top and Trim Adhesive	250

c. Substrate Specific Applications:

a.	Metal to metal	30
b.	Plastic foams	50
c.	Porous material (except wood)	50
d.	Wood	30
e.	Fiberglass	80

d. Aerosol Adhesives:

a.	General purpose mist spray	65% VOC's by weight
b.	General purpose web spray	55% VOC's by weight
c.	Special purpose aerosol adhesives (all types)	70% VOC's by weight

1.9 VOC REQUIREMENTS FOR INTERIOR SEALANTS:

A. The volatile organic compound (VOC) content of sealants, or sealant primers used in this project shall not exceed the limits defined in Rule 1168 – "Adhesive and Sealant Applications" of the South Coast Air Quality Management District (SCAQMD), of the State of California.

B. The VOC limits defined by SCAQMD are as follows. All VOC limits are defined in grams per liter, less water and less exempt compounds.

1 Sealants:

a.	Architectural	250
b.	Non-membrane roof	300
c.	Roadway	250
d.	Single-ply roof membrane	450
e.	Other	420

2 Sealant Primer:

a.	Architectural – Nonporous	250
b.	Architectural – Porous	775
c.	Other	750

1.10 VOC REQUIREMENTS FOR INTERIOR PAINTS:

A. Paints and Primers: Paints and primers used in non-specialized interior applications (i.e., for wallboard, plaster, wood, metal doors and frames, etc.) shall meet the VOC limitations of the Green Seal Paint Standard GS-11, of Green Seal, Inc., Washington, DC. Product-specific environmental requirements are as follows:

1. Volatile Organic Compounds:

a. The VOC concentrations (in grams per liter) of the product shall not exceed those listed below as determined by U. S. Environmental Protection Agency (EPA) Reference Test Method 24.



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Interior Paints and Primers:

Non-flat: 150 g/l

Flat: 50 g/l

The calculation of VOC shall exclude water and tinting color added at the point of sale.

- B. Anti-Corrosive and Anti-Rust Paints: Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates shall meet the VOC limitations of the Green Seal Paint Standard GC-03, of Green Seal, Inc., Washington, DC. Product-specific environmental requirements are as follows:

1. Volatile Organic Compounds:

- a. The VOC concentrations (in grams per liter) of the product shall not exceed those listed below as determined by U. S. Environmental Protection Agency (EPA) Reference Test Method 24.

Anti-Corrosive and Anti-Rust Paints: 250 g/l

The calculation of VOC shall exclude water and tinting color added at the point of sale.

1.11 VOC REQUIREMENTS FOR INTERIOR COATINGS:

- A. Clear wood finishes, floor coatings, stains, sealers, and shellacs applied to the interior shall meet the VOC limitations defined in Rule 1113, "Architectural Coatings" of SCAQMD, of the State of California. The VOC limits defined by SCAQMD, based on 7/9/04 amendments, are as follows. VOC limits are defined in grams per liter, less water and less exempt compounds.

1. Clear Wood Finishes:

a. Varnish	350
b. Sanding Sealers	350
c. Lacquer	550

2. Shellac:

a. Clear	730
b. Pigmented	550

3. Stains 250

4. Floor Coatings 100

5. Waterproofing Sealers 250

6. Sanding Sealers 275

7. Other Sealers 200

The calculation of VOC shall exclude water and tinting color added at the point of sale.

1.12 SUBMITTALS:

- A. Each Contractor shall submit Material Safety Data Sheets, for all applicable products in accordance with Section 01 33 00, SUBMITTAL PROCEDURES. Applicable products include, but are not limited to adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted. (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).
- B. Submit Environmental Building Materials Certification Form (EBMCF): As referenced in Section 01 81 13, Sustainable Design Requirements for LEED Buildings, for each field-applied adhesive, sealant, paint, and coating product, provide the VOC requirement, as provided in this Specification, for the relevant material category indicated on the documentation noted above.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 81 13.13



SECTION 01 81 19
INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 81 19

PART 1 – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 CONSTRUCTION IAQ MANAGEMENT GOALS FOR THE PROJECT:

- A. The City of New York has established that this Project shall minimize the detrimental impacts on Indoor Air Quality (IAQ) resulting from construction activities. Factors that contaminate indoor air, such as dust entering HVAC systems and ductwork, improper storage of materials on-site, poor housekeeping, shall be minimized.

1.3 RELATED SECTIONS:

- A. All sections of the Specifications related to interior construction, MEP systems, and items affecting indoor air quality.
- B. Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS.
- C. Section 01 81 13.13, VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS.
- D. Division 9 (of the Specifications): Finishes.

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.
- C. Volatile Organic Compounds (VOC's): Chemical compounds common in and emitted by many building products, including solvents in paints, coatings, adhesives and sealants, wood preservatives, composite wood binder, and foam insulations. Not all VOC's are harmful, but many of those contained within building products contribute to the formation of smog and may irritate building occupants by their smell and/or health impact.
- D. Materials that act as "sinks" for VOC contamination: Absorptive materials, typically dry and soft materials (such as textiles, carpeting, acoustical ceiling tiles and gypsum board) that readily absorb VOC's emitted by "source" materials and release them over a prolonged period of time.



- E. Materials that act as "sources" for VOC contamination: Products with high VOC contents that emit VOC's either rapidly during application and curing (typically "wet" products, such as paints, sealants, adhesives, caulks and sealers) or over a prolonged period (typically "dry" products such as flooring coverings with plasticizers and engineered wood with formaldehyde).

1.5 REFERENCES, RESOURCES:

- A. "IAQ Guidelines for Occupied Buildings Under Construction", First Edition, November 1995, The Sheet Metal and Air Conditioner Contractors National Association (SMACNA). (703) 803-2980, www.smacna.org.
- B. ANSI/ASHRAE 52.2-1999, "Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size", www.ashrae.org

1.6 LEED BUILDING GENERAL REQUIREMENTS:

- A. Implement practices and procedures as necessary to meet the project's environmental performance goals as set forth in the specific requirements of this section. Specific project goals that may impact this area of work include: use of recycled-content materials; use of low-emitting materials; construction waste recycling; and the implementation of a construction indoor air quality management plan. Ensure that the requirements related to these goals, as defined in this Section, are implemented to the fullest extent. Substitutions or other changes to the work shall not be allowed if such changes compromise the stated LEED BUILDING Performance Criteria.

1.7 CONSTRUCTION IAQ MANAGEMENT PLAN :

- A. The GC Contractor shall prepare and implement a Construction IAQ Management Plan in coordination with each Contractor and submit the IAQ Management Plan to the Commissioner for approval in accordance with Section 01 33 00, SUBMITTAL PROCEDURE. The Construction IAQ Management Plan shall meet the following criteria:
1. Construction activities shall be planned to meet or exceed the minimum requirements of the Sheet Metal and Air Conditioning National Contractors' Association (SMACNA) "IAQ Guidelines for Occupied Buildings under Construction", Second Edition, 2007 (or latest).
 2. Absorptive materials shall be protected from moisture damage when stored on-site and after installation.
 3. If air handlers are to be used during construction, filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 must be used at each return air grill, as determined by ASHRAE 52.2-1999.
 4. Filtration media shall be replaced immediately prior to occupancy. Filtration media shall have a Minimum Efficiency Reporting Value (MERV) of 13 as determined by ASHRAE 52.2-1999 if the project is pursuing Indoor Air Quality Credit 5: Indoor Chemical Pollutant Source Control.
 5. A "Sequence of Finish Installation Plan" shall be developed, highlighting measures to reduce the absorption of VOCs by materials that act as "sinks".
 6. Upon approval of the Plan by the Commissioner, it shall be implemented through the duration of the construction process, and documented in accordance with the Submittal Requirements of Sub-Section 1.08 herein.



- B. Further description of the Construction IAQ Management Plan requirements is as follows:
1. SMACNA Guidelines: Chapter 3 of the referenced "IAQ Guidelines for Occupied Buildings Under Construction", outline IAQ measures in five categories as listed below. The Construction IAQ Management Plan shall be organized in accordance with the SMACNA format, and shall address measures to be implemented in each of the five categories (including subsections). All subsections shall be listed in the Plan; items that are not applicable for this project should be listed as such.
 - a. HVAC Protection
 - 1) Protect air handling and distribution equipment and air supply and return ducting during construction.
 - 2) All ductwork arriving on site will be sealed with plastic sheeting and stored on pallets or dunnage until installed.
 - 3) Cover and protect all exposed air inlets and outlets, openings, grilles, ducts, plenums, etc. to prevent water, moisture, dust and other contaminant intrusion.
 - 4) Apply protection immediately after ducting.
 - 5) Protect ducting runs at the end of day's work.
 - 6) Inspect temporary filtration weekly and replace as required to maintain the proper ventilation rates in the building.
 - b. Source Control
 - 1) Protect stored on-site or installed absorptive or porous materials.
 - 2) Do not use wet or damaged porous materials in the building.
 - 3) Recover, isolate, and ventilate containers housing toxic materials and materials with VOC levels above the limits for interior adhesives, sealants, paints, and coatings described in these Specifications.
 - 4) Exhaust fumes from idling vehicles and gasoline fueled tools through use of funnels or temporary piping.
 - 5) Containers housing toxic materials and materials with VOC levels above the limits for interior adhesives, sealants, paints, and coatings described in these Specifications, shall be closed when not in use.
 - c. Pathway Interruption
 - 1) Depressurize work areas to contain dust and odors.
 - 2) Pressurize occupied spaces to prevent intrusion of dust and odors.
 - 3) Erect barriers to contain construction areas.
 - 4) Relocate pollutant sources.
 - 5) Temporarily seal the building and provide 100% outside air for ventilation.
 - d. Housekeeping
 - 1) Store materials on elevated platforms under cover, in a designated dry, clean location, prior to unpacking for installation.
 - 2) If materials are not stored in an enclosed location, cover tops and sides of material with waterproof sheeting, securely tied.
 - 3) Institute cleaning activities to remove contaminants from the building prior to occupancy. Clean all coils, air filters, and ductwork prior to performing testing, adjusting, and balancing of HVAC systems.
 - 4) Sweep the work area on a daily basis. Use an efficient and effective dust collecting method such as damp cloth, wet mop, or vacuum with particulate filters. Activities which produce high levels of dust shall be cleaned up immediately upon completion.
 - 5) Spills or excess applications of products containing solvents, or with VOC levels above the limits for interior adhesives, sealants, paints, and coatings described in these Specifications, must be removed immediately.
 - 6) Dust all walls prior to application of finishes.
 - 7) Vacuum all stud tracks prior to application of insulation.
 - 8) Materials which become contaminated through direct exposure to moisture from precipitation, plumbing leaks, or condensation shall be replaced by the Contractor.



- e. Scheduling
- 1) Phase construction such that absorptive materials are installed only in areas that are weathertight.
 - 2) Schedule activities that utilize "sources" of VOC contamination to take place prior to installing high absorbent materials that will act as "sinks" for contaminants.
 - 3) Review of the appropriate components of the Construction IAQ Management Plan shall be a regular action topic at weekly site coordination meetings. Implementation of the Plan shall be documented in the meeting minutes.
2. Protection of Materials from Moisture Damage: As part of the "Housekeeping" section of the Construction IAQ Management Plan, measures to prevent installed materials or material stored on-site from moisture damage shall be described. This section should also describe measures to be taken if moisture damage does occur to absorptive materials during the course of construction.
 3. Replacement of Filtration Media: Under the "HVAC Protection" section of the Construction IAQ Management Plan, a description of the filtration media in all ventilation equipment shall be provided. The description shall include replacement criteria for filtration media during construction, and confirmation of filtration media replacement for all equipment immediately prior to occupancy.
 4. Sequence of Finish Installation for Materials: Where feasible, absorptive materials shall be installed after the installation of materials or finishes which have high short-term emissions of VOC's, formaldehyde, particulates, or other air-borne compounds. Absorptive materials include, but are not limited to: carpets; acoustical ceiling panels; fabric wall coverings; insulations (exposed to the airstream); upholstered furnishings; and other woven, fibrous or porous materials. Materials with high short-term emissions include, but are not limited to: adhesives, sealants and glazing compounds (specifically those with petrochemical vehicles or carriers); paints, wood preservatives and finishes; control and/or expansion joint fillers; hard finishes requiring adhesive installation; gypsum board (with associated finish processes and products); and composite or engineered wood products with formaldehyde binders.
 5. Develop and implement an Indoor Air Quality (IAQ) Management Plan for the pre-occupancy phase as follows:

OPTION 1 — Flush-Out

• After construction ends, prior to occupancy and with all interior finishes installed, perform a building flush-out by supplying a total air volume of 14,000 cu.ft. of outdoor air per sq.ft. of floor area while maintaining an internal temperature of at least 60 degrees F and relative humidity no higher than 60%.

OR

• If occupancy is desired prior to completion of the flush-out, the space may be occupied following delivery of a minimum of 3,500 cu.ft. of outdoor air per sq.ft. of floor area to the space. Once a space is occupied, it shall be ventilated at a minimum rate of 0.30 cfm/sq.ft. of outside air or the design minimum outside air rate determined in EQ Prerequisite 1, whichever is greater. During each day of the flush-out period, ventilation shall begin a minimum of three hours prior to occupancy and continue during occupancy. These conditions shall be maintained until a total of 14,000 cu.ft./sq.ft. of outside air has been delivered to the space.

OR

OPTION 2 — Air Testing

• Conduct baseline IAQ testing, after construction ends and prior to occupancy, using testing protocols consistent with the United States Environmental Protection Agency Compendium of



Methods for the Determination of Air Pollutants in Indoor Air and as additionally detailed in the LEED-NC Reference Guide.

- Demonstrate that the contaminant maximum concentrations listed below are not exceeded.

CONTAMINANT	MAXIMUM CONCENTRATION
Formaldehyde	27 parts per billion
Particulates (PM10)	50 micrograms per cubic meter
Total Volatile Organic Compounds (TVOC)	500 micrograms per cubic meter
* 4-Phenylcyclohexene (4-PCH)	6.5 micrograms per cubic meter
Carbon Monoxide (CO)	9 part per million and no greater than 2 parts per million above outdoor levels
* This test is only required if carpets and fabrics with styrene butadiene rubber (SBR) latex backing material are installed as part of the base building systems.	

- For each sampling point where the maximum concentration limits are exceeded, conduct additional flush-out with outside air and retest the specific parameter(s) exceeded to indicate the requirements are achieved. Repeat procedure until all requirements have been met. When retesting non-complying building areas, take samples from the same locations as in the first test.

- The air sample testing shall be conducted as follows:

- a. All measurements shall be conducted prior to occupancy, but during normal occupied hours and with the building ventilation system starting at the normal daily start time and operated at the minimum outside air flow rate for the occupied mode throughout the duration of the air testing.
 - b. The building shall have all interior finishes installed, including but not limited to millwork, doors, paint, carpet and acoustic tiles. Non-fixed furnishings such as workstations and partitions are encouraged, but not required, to be in place for the testing.
 - c. The number of sampling locations will vary depending upon the size of the building and number of ventilation systems. For each portion of the building served by a separate ventilation system, the number of sampling points shall not be less than one per 25,000 sq.ft., or for each contiguous floor area, whichever is larger, and include areas with the least ventilation and greatest presumed source strength.
 - d. Air samples shall be collected between 3 feet and 6 feet from the floor to represent the breathing zone of occupants, and over a minimum 4-hour period.
6. Implementation and Coordination: Implement the Construction IAQ Management Plan, and coordinate the Plan with all affected trades. Each Contractor shall designate one individual as the Construction IAQ Representative at no additional cost to the City of New York, who will be responsible for communicating the progress of the Plan with the Commissioner on a regular basis, and for assembling the required LEED documentation. Include provisions in the Construction IAQ Management Plan for addressing conditions in the field that do not adhere to the Plan, including provisions to implement a stop work order, or to rectify non-compliant conditions.
- a. Distribution: The GC Contractor shall distribute copies of the Construction IAQ Management Plan in accordance with Section 01 33 00, SUBMITTAL PROCEDURES.
 - b. Instruction: The GC Contractor shall provide on-site instruction of appropriate site management to each Contractor.



- c. Monitoring: The Construction IAQ Representative shall monitor the implementation of the Construction IAQ Management Plan.

1.8 SUBMITTALS:

Submit the following LEED-required records and documents in accordance with Section 01 33 00, SUBMITTAL PROCEDURES and Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS.

- A. A copy of the Construction IAQ Management Plan as defined in Sub-Section 1.7 herein.
- B. Product cut-sheets for all filtration media used during construction and installed immediately prior to occupancy, with MERV values highlighted. Cut sheets shall be submitted with each Contractor's or Subcontractor's 'approved' stamp as confirmation that the products are the products installed on the project.
- C. Provide the Commissioner with a minimum of 18 photographs as required under the provision for Special Photographs, in accordance with Section 01 32 33, PHOTOGRAPHIC DOCUMENTATION, comprised of at least six photographs taken on three different occasions during construction. The photographs shall document the implementation of the Construction IAQ Management Plan throughout the course of the project construction. Examples include photographs of ductwork sealing and protection, temporary ventilation measures, and conditions of on-site materials storage (to prevent moisture damage). Photographs shall include integral date stamping, and shall be submitted with brief descriptions of the Construction IAQ Management Plan measure documented, or be referenced to project meeting minutes or similar project documents which reference to the Construction IAQ Management Plan measure documented.
- D. A copy of the project's TAQ Testing report if applicable.

1.9 QUALITY ASSURANCE:

- A. The GC Contractor shall be responsible for preparing and implementing the Construction IAQ Management Plan and shall coordinate and incorporate the work of each Contractor in the IAQ Management Plan.
- B. Responsibility of other Contractors: Each Contractor for this project shall be responsible to cooperate with the GC Contractor in the preparation and implementation of the Construction IAQ Management Plan.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 81 19



SECTION 01 91 13
GENERAL COMMISSIONING REQUIREMENTS

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 91 13

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].
- B. OPR and BoD documentation are included by reference for information only.
- C. The Commissioning Plan, prepared by the Commissioning Agent (CxA) under separate contract with the City of New York, contains requirements that apply to this section.

1.2 SUMMARY:

- A. This Section includes general requirements that apply to implementation of Commissioning without regard to systems, subsystems, and equipment being commissioned.
- B. This Section includes:
 - 1. Definitions
 - 2. Commissioning Team
 - 3. City's Responsibilities
 - 4. Each Contractor's Responsibilities
 - 5. Commissioning Authority's/Agent's (CxA) Responsibilities
 - 6. Commissioning Documentation
 - 7. Submittals
 - 8. Coordination

1.3 RELATED SECTIONS: Include without limitation the following:

- A. "HVAC Commissioning Requirements" indicated in other sections of the project specifications for specific requirements for commissioning HVAC systems.
- B. This project will be commissioned by an independent third party under separate contract with the City of New York. Commissioning shall be in accordance with ASHRAE and USGBC LEED procedures, and specific commissioning requirements of the Project Specifications, whichever is more stringent. Each Contractor shall cooperate with the CxA and provide whatever assistance is required.
- C. Related Sections include without limitation the following:
 - 1. Section 01 10 00 SUMMARY
 - 2. Section 01 31 00 PROJECT MANAGEMENT AND COORDINATION
 - 3. Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION
 - 4. Section 01 78 39 CONTRACT RECORD DOCUMENTS
 - 5. Section 01 79 00 DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION
 - 6. Section 01 81 13 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS



1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.
- C. Commissioner: The Commissioner of the Department of Design and Construction of the City of New York, his/her successors, or duly authorized representative(s).
- D. BoD: Basis of Design: A document, prepared by the Design Consultant that records concepts, calculations, decisions, and product selections used to meet the OPR and to satisfy applicable regulatory requirements, standards, and guidelines. The document includes both narrative descriptions and lists of individual items that support the design process.
- E. Commissioning Plan: A document that outlines the organization, schedule, allocation of resources, and documentation requirements of the commissioning process.
- F. CxA: Commissioning Agent (Aka Commissioning Authority) under separate contract with the City of New York to provide Commissioning Services for this project.
- G. OPR: Owner's (City of New York) Project Requirements: A document, prepared by the Design Consultant that details the functional requirements of a project and the expectations of how it will be used and operated. These include Project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information.
- H. Systems, Subsystems, Equipment, and Components: Where these terms are used together or separately, they shall mean "as-built" systems, subsystems, equipment, and components.
- I. TAB: Testing, Adjusting, and Balancing.

1.5 COMMISSIONING TEAM:

- A. Members Appointed by each Contractor: Individuals, each having authority to act on behalf of the entity he or she represents, explicitly organized to implement the commissioning process through coordinated actions. The commissioning team shall consist of, but not be limited to, representatives of each Contractor, including Project superintendent and subcontractors, installers, suppliers, and specialists deemed appropriate by the CxA.
- B. Members Appointed by the City:
 - 1. Commissioning Authority/Agent (CxA): The designated person, company, or entity under separate contract with the City that plans, schedules, and coordinates the commissioning team to implement the commissioning process.
 - 2. Representatives of the facility user and operation and maintenance personnel.
 - 3. Design Consultant and other concerned entities.



1.6 CITY'S RESPONSIBILITIES:

- A. Provide the OPR documentation to the Commissioning Agent (CxA) for use in developing the commissioning plan; systems manual; operation and maintenance orientation plan; and testing plans and checklists.
- B. Assign operation and maintenance personnel and schedule them to participate in commissioning team activities.
- C. Provide the BoD documents, prepared by the Design Consultant and approved by the Commissioner, to the Commissioning Agent (CxA) for use in developing the commissioning plan, systems manual, and operation and maintenance orientation plan.

1.7 CONTRACTOR'S RESPONSIBILITIES:

- A. The Contractor(s) responsible for each specific service shall provide utility services required for the commissioning process.
- B. As a member of the Commissioning Team, each Contractor and their subcontractors shall assign representatives with expertise and authority to act on behalf of each Contractor and schedule them to participate in and perform commissioning team activities including, but not limited to, the following:
 - 1. Participate in scheduled construction-phase coordination and commissioning team meetings.
 - 2. Integrate and coordinate commissioning process activities with the construction schedule.
 - 3. Review and accept commissioning process test procedures provided by the CxA.
 - 4. Review and accept construction checklists provided by the CxA.
 - 5. Perform testing required in the Commissioning Schedule as per the Commissioning Process test procedures provided by the CxA.
 - 6. Complete installation checklists as Work is completed and return to CxA through the Resident Engineer.
 - 7. Cooperate with the CxA for resolution of issues recorded in the Issues Log.
 - 8. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.
 - 9. Submit As-Built documents, operation and maintenance manuals for systems and subsystems, and equipment in accordance with Section 01 78 39, CONTRACT RECORD DOCUMENTS.
 - 10. Provide orientation sessions for operation and maintenance personnel (sessions will be recorded by each contractor providing demonstration and orientation instruction sessions) in accordance with Section 01 79 00, DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION.

1.8 COMMISSIONING AGENT'S (CxA) RESPONSIBILITIES:

- A. Organize and lead the commissioning team.
- B. Prepare a construction-phase commissioning plan. Collaborate through the Resident Engineer with each Contractor and with subcontractors to develop test and inspection procedures. Include design changes and coordinate commissioning activities with the overall Project schedule. Identify commissioning team member responsibilities, by name, firm, and trade specialty, for performance of each commissioning task.
- C. Review and comment in accordance with Section 01 33 00, SUBMITTAL PROCEDURES, on submittals from each Contractor for compliance with the OPR, BoD, Contract Documents, and construction-phase commissioning plan. Review and comment on performance expectations of systems and equipment and interface between systems relating to the OPR and BoD.
- D. Coordinate with the Resident Engineer to convene commissioning team meetings for the purpose of coordination, communication, and conflict resolution; discuss progress of the commissioning processes. Responsibilities include arranging for facilities, preparing agenda and attendance lists, and notifying



participants. The Commissioning Agent (CxA) will prepare and distribute minutes to commissioning team members and attendees within three workdays of the commissioning meeting.

- E. At the beginning of the construction phase, coordinate with the Resident Engineer's kick-off meeting schedule to conduct an initial construction-phase coordination meeting for the purpose of reviewing the commissioning activities and establishing tentative schedules for operation and maintenance submittals, operation and maintenance orientation sessions, TAB Work, and Project completion.
- F. Observe and inspect construction. Report progress and deficiencies to the Commissioner. In addition to compliance with the OPR, BoD, and Contract Documents, inspect systems and equipment installation for adequate accessibility required for component maintenance replacement and repair.
- G. Prepare Project-specific test and inspection procedures and checklists.
- H. Coordinate with the Resident Engineer to schedule, direct, witness, and document tests, inspections, and systems startup.
- I. Compile test data, inspection reports, and certificates and include them in the systems manual and commissioning report.
- J. Certify date of acceptance and startup for each item of equipment for start of warranty periods.
- K. Review and comment on operation and maintenance documentation and systems manual outline for compliance with the OPR, BoD, and Contract Documents. Operation and maintenance documentation requirements are specified in other sections of the project specifications and described in Section 01 78 39, CONTRACT RECORD DOCUMENTS.
- L. Record and edit demonstration and orientation sessions on DVD.
- M. Prepare commissioning reports.
- N. Assemble the final commissioning documentation, including the commissioning report and Systems Manual.

1.9 COMMISSIONING DOCUMENTATION:

Each Contractor shall assist the Commissioning Agent (CxA) in the development and compiling of the following Commissioning Documentation:

- A. Index of Commissioning Documents: The Commissioning Agent (CxA) will prepare an index including the storage location of each document.
- B. OPR: A written document prepared by the Design Consultant that details the functional requirements of the Project and expectations of how it will be used and operated. This document includes the Project and design goals, measurable performance criteria, budgets, schedules, success criteria, and supporting information.
- C. BoD Document: A document, prepared by the Design Consultant, that records concepts, calculations, decisions, and product selections used to meet the OPR and to satisfy applicable regulatory requirements, standards, and guidelines. The document includes both narrative descriptions and lists of individual items that explain the designed systems.
- D. Commissioning Plan: A document, prepared by the Commissioning Agent (CxA), that outlines the schedule, allocation of resources, and documentation requirements of the commissioning process.
- E. Test Checklists: The Commissioning Agent (CxA) will develop test checklists for each system, subsystem, or equipment including interfaces and interlocks, and include a separate entry, with space for comments, for each item to be tested. The CxA will prepare separate checklists for each mode of operation and provide space to indicate whether the mode under test responded as required. Space will be provided for testing personnel to sign off on each checklist. Specific checklist content requirements are specified in other sections of the project specifications.



- F. Inspection Checklists will be signed by each Contractor, Subcontractor(s), Installer(s), and CxA certifying that systems, subsystems, equipment, and associated controls are ready for testing.
- G. Test and Inspection Reports: The Commissioning Agent (CxA) will record test data, observations, and measurements on test checklists. Photographs, forms, and other means appropriate for the application will be included with data. CxA shall compile test and inspection reports and test and inspection certificates and include them in systems manual and commissioning report.
- H. Corrective Action Documents: The Commissioning Agent (CxA) will document corrective action taken for systems and equipment that fail tests and include required modifications to systems and equipment and revisions to test procedures, if any. Each Contractor, as applicable shall retest systems and equipment requiring corrective action. The CxA will document retest results.
- I. Issues Log: The Commissioning Agent (CxA) will prepare and maintain an issues log that describes design, installation, and performance issues that are at variance with the OPR, BoD, and Contract Documents. The log will identify and track issues as they are encountered, documenting the status of unresolved and resolved issues.
 - 1. Commissioning Report: The Commissioning Agent (CxA) will document results of the commissioning process including unresolved issues and performance of systems, subsystems, and equipment. The commissioning report will indicate whether systems, subsystems, and equipment have been completed and are performing according to the OPR, BoD, and Contract Documents.
- J. Systems Manual: The Commissioning Agent (CxA) will gather required information and compile systems manual as specified in other sections of the project specifications and described in Section 01 78 39, CONTRACT RECORD DOCUMENTS..

1.10 SUBMITTALS:

- A. Commissioning Plan Pre-final Submittal: The Commissioning Agent (CxA) will submit six (6) copies of the pre-final commissioning plan to the Commissioner for review and distribution.
- B. Commissioning Plan Final Submittal: The Commissioning Agent (CxA) will submit six (6) hard copies and electronically formatted information of the final commissioning plan to the Commissioner. The final submittal will address previous review comments.
- C. Test and Inspection Reports: CxA will submit test and inspection reports.
- D. Corrective Action Documents: CxA will submit corrective action documents.

1.11 COORDINATION:

- A. Coordinating Meetings: The Commissioning Agent (CxA) will coordinate with the Resident Engineer's regularly scheduled construction progress meetings to conduct coordination meetings of the commissioning team to review progress on the commissioning plan, to discuss scheduling conflicts, and to discuss upcoming commissioning process activities.
- B. Pre-testing Meetings: The Commissioning Agent (CxA) will coordinate with the Resident Engineer to conduct pretest meetings of the commissioning team to review startup reports, pretest inspection results, testing procedures, testing personnel and instrumentation requirements, and manufacturers' authorized service representative services for each system, subsystem, equipment, and component to be tested.
- C. Testing Coordination: The Commissioning Agent (CxA) will coordinate with the Resident Engineer the sequence of testing activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.



1. Coordinate schedule times with the Resident Engineer for tests, inspections, obtaining samples, and similar activities.
- D. Manufacturers' Field Services: The Commissioning Agent (CxA) will coordinate services of manufacturers' field services.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION

3.1 OPERATION & MAINTENANCE MANUALS

- A. General
1. The CxA shall review the Operation & Maintenance manuals provided by each Contractor(s) or their subcontractors for completeness of the document. The review process shall verify that Operation & Maintenance instructions meet specifications and are included for all Commissioned equipment furnished by each Contractor.
 2. Published literature shall be specifically oriented to the provided equipment, indicating required operation and maintenance procedures, parts lists, assembly / disassembly diagrams and related information.
 3. Each Contractor shall incorporate the standard technical literature into system specific formats for this facility as designed and as actually installed. The resulting Operation & Maintenance information shall be system specific, concise, to the point and tailored specifically to this facility. The CxA shall review these documents as necessary for final corrections by each Contractor(s) as applicable.
- B. The Operation & Maintenance Manual review and coordination efforts shall be completed prior to Owner orientation sessions, as these documents are to be utilized in the orientation sessions.
- C. System Operations Manual
1. The CxA shall prepare and deliver these documents with inputs from other agencies. Each Contractor(s) will confirm the proper documents are onsite and readily available. Typically, the manual includes the following:
 - a. Commissioned systems single line diagrams (Mechanical, Electrical, Plumbing, and Building Management System (BMS) subcontractors).
 - b. As built sequences of operations, control drawings and original set points (Design Consultant, and BMS subcontractor)
 - c. Operating instructions for integrated building systems (mechanical and BMS subcontractors).
 - d. Recommended schedule of maintenance requirements and frequency (subcontractors).
 - e. Recommended schedule for calibrating sensors and actuators (BMS subcontractor)

3.2 DEMONSTRATION AND INSTRUCTION

- A. Each Contractor shall schedule and coordinate instruction sessions for the facility's staff for each commissioned system. Demonstrations shall be held per Contract Documents, along with the appropriate schematics, handouts and visual / audio training aids onsite with equipment.
- B. The equipment vendors shall provide instruction on the specifics of each major equipment item including philosophy, troubleshooting and repair techniques.
- C. For additional prescription pertinent to instruction, refer to other specific divisions for demonstration and instruction requirements.



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
MULTIPLE CONTRACT PROJECTS
Issue Date - January 15, 2015

3.3 WARRANTY REVIEW / SEASONAL TESTING

- A. The CxA will return upon the start of the new season (cooling or heating) after project completion to conduct performance tests that could not be performed due to ambient conditions. The seasonal testing will only be performed if unsuitable loads / conditions were unavailable during the performance testing stages (in other words; the requirement for testing is warranted).
- B. If agreed upon by facility, Seasonal Testing can also be used for the Warranty Review. During which the CxA will interview the occupants, maintenance staff, review the operation of the building, provide recommendations for installation and operational problems and document warranty and operational issues in the issues database.

3.4 RECORD DRAWINGS

- A. The CxA shall review the as built contract documents to verify incorporation of both design changes and as built construction details. Discrepancies noted shall be corrected by the appropriate party.

END OF SECTION 01 91 13



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
MULTIPLE CONTRACT PROJECTS
Issue Date January 15, 2015

NO TEXT

GENERAL COMMISSIONING REQUIREMENTS
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**THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS**

30-30 THOMSON AVENUE LONG ISLAND CITY, NEW YORK 11101-3045
TELEPHONE (718) 391-1000 WEBSITE www.nyc.gov/buildnyc

Contract for Furnishing all Labor and Material Necessary

Contractor

Dated _____, 20____

Approved as to Form
Certified as to Legal Authority

Acting Corporation Counsel

Dated _____, 20____

Entered in the Comptroller's Office

First Assistant Bookkeeper

Dated _____, 20____



FMS ID: PV181HSA2



**THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS**

30-30 THOMSON AVENUE LONG ISLAND CITY, NEW YORK 11101-3045
TELEPHONE (718) 391-1000 WEBSITE www.nyc.gov/buildnyc

Contract for Furnishing all Labor and Material Necessary and Required for:

CONTRACT NO. 1 GENERAL CONSTRUCTION

**Harlem School of the Arts, Phase II
Building Renovations**

**LOCATION: 645 St. Nicholas Avenue
BOROUGH: Manhattan 10031
CITY OF NEW YORK**

A. Aleem Construction Inc.
Contractor

Dated June 30, 2016

Approved as to Form
Certified as to Legal Authority
[Signature]
Acting Corporation Counsel

Dated September 24, 2015

Entered in the Comptroller's Office

First Assistant Bookkeeper

Dated _____, 20____

JP
9.24.15





PROJECT ID:

PV181HSA2

**THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS**

30-30 THOMSON AVENUE
LONG ISLAND CITY, NEW YORK 11101-3045
TELEPHONE (718) 391-1000
WEBSITE www.nyc.gov/buildnyc

VOLUME 3 OF 3

LAW

**ADDENDUM TO THE GENERAL
CONDITIONS**

SPECIFICATIONS

FOR FURNISHING ALL LABOR AND MATERIALS
NECESSARY AND REQUIRED FOR:

**Harlem School of the Arts, Phase II
Building Renovations**

LOCATION:
BOROUGH:
CITY OF NEW YORK

645 St. Nicholas Avenue
Manhattan 10031

CONTRACT NO. 1

GENERAL CONSTRUCTION

DCA

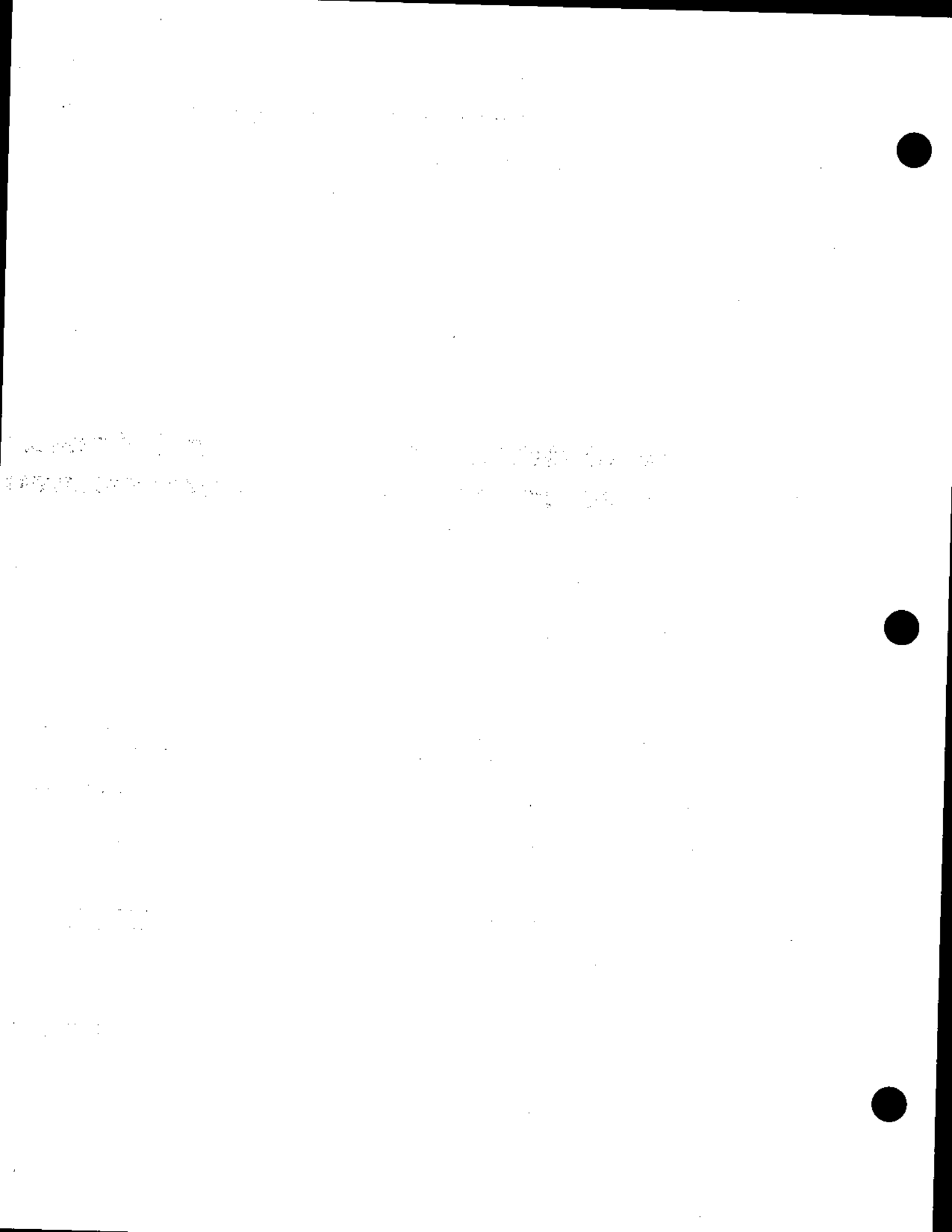
Greenman-Pedersen, Inc.

Date:

May 27, 2015



15-188



THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

November 9, 2015

ADDENDUM No. # 1

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

PV181HSA2

Harlem School of the Arts, Phase II Building Renovations

This addendum is issued for the purpose of amending the requirements of the Bid and Contract Documents and is hereby made a part of said Bid and Contract Documents to the same extent as though it were originally included therein.

The bidder is advised that the items listed below apply to the project:

1. **Questions from Bidders and Responses to Questions:**
See Attachment A.

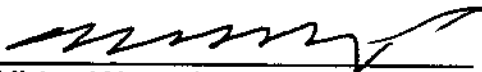
2. **Revisions to the Addendum to the General Conditions:**
See Attachment B.

3. **Revisions to the Drawings:**
See Attachment C.

4. **Revisions to Volume 2 of 3:**
See Attachment D.

THIS ADDENDUM MUST BE SIGNED BY ALL BIDDERS AND ATTACHED TO THEIR BIDS.

If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-3170, (718) 391-1016, or by fax at (718) 391-2615.



Michael Nastasi
Assistant Commissioner
Cultural/ Parks Programs

Name of Bidder

By: _____

DDC PROJECT #: PV181HSA2

PROJECT NAME: Harlem School of the Arts, Phase II Building Renovations.

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

No.	Bidders Questions	DDC Responses
1	Please provide the name and contact information for the existing building Fire Alarm Company.	The existing Fire Alarm Company information is listed below: Fire Alarm maintenance vendor: Classic Systems, Inc. New York office (516) 997-9100 86 Garden Street, Westbury, NY 11590. Contacts: Mike Terry or Ron Schaal. Company Website: classicsystemsinc.com .
2	Project includes underpinning requirement at elevator outline on the 1 st floor. Please determine length and depth of underpinning work shown on Drawing S-005, detail 8 to properly price the task.	Contractor shall include in bid price 24" deep rock excavation for elevator pit. Excavation area is 11'-4" x 9'-4". Underpinning requirement is excluded from the project.
3	Please provide missing drawing #DM-004.00, First Floor Plan Demolition.	Missing drawing #DM-004.00 is included with this Addendum. Refer to Attachment C – Revisions to the Drawings
4	Please provide an electronic excel file of the Bid Breakdown.	An electronic excel file of the Bid Breakdown will be made available to the successful bidder.

DDC PROJECT #: PV181HSA2

PROJECT NAME: Harlem School of the Arts, Phase II Building Renovations.

ATTACHMENT B – REVISIONS TO THE ADDENDUM TO THE GENERAL CONDITIONS

1. Delete Addendum to the General Conditions (dated January 15, 2015) and replace with revised Addendum to the General Conditions (dated July 01, 2015), included with this Addendum.

DDC PROJECT #: PV181HSA2

PROJECT NAME: Harlem School of the Arts, Phase II Building Renovations.

ATTACHMENT C – REVISIONS TO THE DRAWINGS

1. Drawing Sheet DM-004.00 First Floor Plan Demolition:
Include missing drawing DM-004.00 First Floor Plan Demolition, included with this Addendum.

DDC PROJECT #: PV181HSA2

PROJECT NAME: Harlem School of the Arts, Phase II Building Renovations.

ATTACHMENT D – REVISIONS TO VOLUME 2 of 3

1. Insert Hiring and Employment Rider, included with this Addendum.
2. Insert Paid Sick Leave Law Contract Rider, included with this Addendum.



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

ADDENDUM TO THE GENERAL CONDITIONS
FOR SINGLE CONTRACT PROJECTS

The General Conditions are hereby amended in accordance
with the terms and conditions set forth in this Addendum.

I. PROJECT DESCRIPTION

FMS #: PV181HSA2

PROJECT NAME: HARLEM SCHOOL OF THE ARTS, PHASE II BUILDING RENOVATIONS

PROJECT DESCRIPTION: This Project consists of upgrade of the existing facility which will include the rehabilitation of the main entrance to achieve barrier free accessibility, creation of a barrier free restroom on the second floor, installation of a new elevator to serve the first, second, and third floors, replacing the boiler and hot water systems, new central air-conditioning units, modification of existing air- distribution system, and provide additional electrical outlets in the "G Space" to be used for portable sound and lighting devices.

PROJECT LOCATION: 645 St Nicholas Avenue
BOROUGH: Manhattan
CITY OF NEW YORK
ZIP CODE: 10031
COMMUNITY BOARD #: 109

LANDMARK STATUS:

DESIGNATED LANDMARK STRUCTURE OR SITE: NO

LANDMARK QUALITY STRUCTURE: NO

II. LEED GREEN BUILDING REQUIREMENTS

Not Used.

III. COMMISSIONING REQUIREMENTS

Not Used

IV. PROJECT MANAGEMENT

DDC shall publicly bid and enter into all contracts for the Project. DDC shall manage the Project using its own personnel.

DDC shall publicly bid and enter into all contracts for the Project. A Construction Management firm (the "CM") hired by DDC shall manage the Project. The Contractor is advised that the CM shall serve as the representative of the Commissioner at the site and shall, subject to review by the Commissioner, be responsible for the inspection, management, coordination and administration of the required construction work, as delineated in the article of the Standard Construction Contract entitled "The Resident Engineer".

V. CONTRACTS FOR THE PROJECT

The Project consists of a single contract, the Contract for General Construction Work. The Contractor for General Construction Work is responsible for the performance of all required work for the Project as set forth in the Contract Documents (General Conditions, Drawings and Specifications), including all responsibilities and obligations assigned to separate Contractors for the following subdivisions of the work: Plumbing Work, HVAC Work, and Electrical Work. All responsibilities and obligations in the Contract Documents assigned to separate Contractors for such subdivisions of the work are the responsibility of the Contractor for General Construction Work.

The separate Contracts pertaining to this Project are set forth below:

Contract No. 1 - Contract for General Construction Work

VI. SCHEDULES

The Contractor is advised that Schedules A through F are attached to, and incorporated as part of, this Addendum to the General Conditions. These schedules contain important information that is specific to this Project. The Contractor is advised to carefully review these schedules.

VII. APPLICABILITY OF SECTIONS/SUB-SECTIONS AND AMENDED SUB-SECTIONS

The Contractor is advised that various Sections/Sub-Sections in the General Conditions may not apply to this Project or may apply as amended. Such Sections/Sub-Sections advise the Contractor to "Refer to the Addendum for the applicability of this Section/Sub-Section." Such Sections/Sub-Sections are set forth below. A check mark indicates whether the Section/Sub-Section (1) applies to the Project, (2) does not apply to the Project, or (3) applies to the Project as amended. If no box is checked, the Section/Sub-Section, as set forth in the General Conditions, applies to the Project. Amended Sections/Sub-Sections, if any, are set forth following this list of Sections.

<u>Section</u>	<u>Sub-Section</u>	<u>Sub-Section</u>	<u>Applies</u>	<u>Does not Apply</u>	<u>Applies as Amended</u>
01 1000	1.4 (B)	Scope and Intent / LEED		x	
	1.4(C)	Scope and Intent / Commissioning		x	
01 3233		Photographic Documentation		x	
01 3300	1.7 (A-D)	LEED Submittals		x	
01 3503		General Mechanical Requirements	x		
01 3506	3.2 (A-B)	Electrical Conduit System Including Boxes (Pull, Junction and Outlet)	x		
	3.3 (A-E)	Electrical Wiring Devices	x		
	3.4 (A-I)	Electrical Conductors and Terminations	x		
	3.5 (A-B)	Circuit Protective Devices	x		
	3.6 (A-J)	Distribution Centers	x		
	3.7 (A-I)	Motors	x		
	3.8 (A-I)	Motor Control Equipment	x		
01 3591		Historic Treatment Procedures		x	
01 5000	3.2 (A)	Temporary Water Facilities / Temporary Water		x	
	3.2 (B)	Temporary Water Facilities / Temporary Water – Work in Existing Facilities	x		
	3.3 (B)	Temporary Sanitary Facilities / Self-Contained Toilet Units		x	
	3.3 (C)	Temporary Sanitary Facilities / Existing Toilets	x		
	3.4 (B) 1	Temporary Power, Lighting, and Site Lighting / Connection to Utility Lines		x	

<u>Section</u>	<u>Sub-Section</u>	<u>Sub-Section</u>	<u>Applies</u>	<u>Does not Apply</u>	<u>Applies as Amended</u>
01 5000	3.4 (B) 2	Temporary Power, Lighting, and Site Lighting / Connection to Existing Electrical Power Service	x		
	3.4 (B) 3	Temporary Power, Lighting, and Site Lighting / Electrical Generator Power Service		x	
	3.4 (D)	Temporary Power, Lighting, and Site Lighting / Temporary Lighting		x	
	3.4 (E)	Temporary Power, Lighting, and Site Lighting / Site Security Lighting (for New Construction Only)		x	
	3.5 (A-J)	Temporary Heat	x		
	3.8 (A)	DDC Field Office / Office Space in Existing Building		x	
	3.8 (B)	DDC Field Office / DDC Field Office Trailer	x		
	3.8 (B-3a)	DDC Field Office / DDC Managed Field Office Trailer	x		
	3.8 (B-3b)	DDC Field Office / CM Managed Field Office Trailer		x	
	3.8 (D)	DDC Field Office / Additional Equipment for the DDC Field Office	x		
	3.13(A-D)	Work Fence Enclosure		x	
	3.17(B)	Project Rendering		x	
	3.18 (A-C)	Security Guards / Fire Guards on Site		x	
01 5411	3.1 (A-J)	Temporary Use, Operation and Maintenance of Elevators During Construction for New Buildings Up To and Including 15 Stories		x	
	3.2 (A-M)	Temporary Use, Operation and Maintenance of Elevators During Construction for New Buildings Over 15 Stories		x	
	3.3 (A-E)	Temporary Use, Operation and Maintenance of Elevators During Construction for Existing Buildings		x	
01 7300	3.3 (A-I)	Surveys			x
	3.4 (A-B)	Borings		x	
	3.12 (A-D)	Sleeves and Hangers	x		
	3.13 (A)	Sleeve and Penetration Drawings	x		
	3.15 (A)	Location of Partitions	x		
01 7419	1.5 (C)	Waste Management Performance Requirements / LEED Certification		x	
01 7900		Demonstration and Owner's Pre-Acceptance Orientation	x		
01 8113		Sustainable Design Requirements for LEED Buildings		x	
01 8113.13		VOC Limits for Adhesives, Sealants, Paints and Coatings for LEED Buildings		x	
01 8119		Indoor Air Quality Requirements for LEED Buildings		x	
01 9113		General Commissioning Requirements	x		

AMENDED SECTIONS/SUB-SECTIONS

The Contractor is advised that the amended Sub-Sections set forth below are included in the General Conditions and apply to the Project.

1. Section 017300 Execution, Articles 3.3 A thru D are not applicable for this project. Applicable Articles are 3.3 E thru I.

ADDITIONAL SECTION/SUB-SECTIONS

PROJECT WORKING HOURS

- A. The Contractor shall establish the work hours for the project within the parameters set forth by the City of New York Department of Buildings, the Department of Environmental Protection, and other agencies having such jurisdiction. Provide the Commissioner with a schedule of the intended hours in order for it to set its personnel schedule.
- B. No overtime work shall be performed without prior written approval by the Commissioner.
- C. When performing work during "After hours" periods as determined by the NYC Building Department, obtain and pay for all required permits.
- D. The Harlem School of The Arts (HSA) will remain open during construction. Construction activities shall be performed between 7:00 AM and 3:00 PM, Monday to Friday. All areas must be swept and cleaned by 3:00pm. All contractors and workers must exit HSA property by 3:15pm.

CONTRACTOR GUIDELINES

- A. Construction Progress Meetings shall be as per General Conditions Section 013100 Project Management and Coordination.
- B. Appointed construction supervisor must be onsite at all times while construction workers are in the building.
- C. Construction materials may not be left in front of the main entrance or in courtyard. The building's main entrance may not be used for deliveries.
- D. Debris may not be left in front of the building. All dumpsters related to construction must be arranged and supervised by construction supervisor.
- E. Dust Control as per General Conditions Section 011000 Summary.
- F. All contractors and workers must sign in and out daily.
- G. Egress from the building must be clearly defined and adhere to current NYC Fire Department and Department of Building codes during construction.

PHASING

A. Order of Work:

1. To complete all the work of all Trades within the required Contract Duration, and to accommodate Project needs, the Work of this Contract shall be performed in "Phases" coordinated with HSA and DDC. Prior to commencement of work, General Contractor shall develop a Phasing Plan outlining all major phases of the projects that will be performed consequently or concurrently, and submit to DDC/HSA for approval.
2. *Order of Work and Phasing Plan shall address the following Priorities:*
 - a. *Boiler Room Renovation (Boiler, Water Heater, Pumps, Piping).*
 - b. *Replacement of HVAC Rooftop Units and Modification to existing ductwork, including replacement of several VAV boxes.*
 - c. *Installation of New Elevator.*
 - d. *Renovation and installation of ADA-compliant bathroom on the second floor.*
 - e. *Modification of Access Ramp and Entrance Doors.*
3. *Phasing Plan should consider seasonal constraints and Occupancy Level.*

General Contractor and sub-contractors should consider the following Notes and Recommendations:

- a. *Existing hot water distribution systems (boiler, pumps, hot water heater) are not functional. Boiler Room renovation can be performed during any season.*
- b. *Rooftop Units HVAC-2, HVAC-3, HVAC-4, and HVAC-5 provide cooling and heating for main HSA spaces and studios. Replacement of these units shall be well coordinated and performed during the spring or fall. Replacement of these units shall be completed by the beginning of heating season.*
- c. *Installation of the new elevator includes cutting of slabs, underpinning, roof opening and construction of elevator shaft. Slab opening on second floor will require installation of support steel and temporary dust mitigation partitions to allow use of the remaining portion of the Recital Room during the evening hours. Roof opening shall be temporarily protected and waterproofed. Preferable period for installation of elevator shaft is from May to the end of September.*
- d. *ADA-compliant toilet could be constructed during any seasons (subject to approval and coordination with HSA-planned high occupancy events).*
- e. *Renovation to access ramp and entrances will require the use of alternate means of egress. It should be scheduled and coordinated with HSA.*

Contractor Phasing Plan shall address the following:

- *Public safety.*
- *Accessibility to the means of egress.*
- *Safe access by occupants to the working place or visiting destination.*
- *As minimal as possible, interruption of the daily activities of HSA staff without compromising their safety.*
- *Minimum interruption of utility services.*

VIII. SPECIAL EXPERIENCE REQUIREMENTS FOR THE PROJECT

Not Used

IX. REVISIONS: SPECIFICATIONS AND CONTRACT DRAWINGS

The Specifications and the Contract Drawings for the Project are revised in accordance with the provisions set forth below.

- (1) Owner: Wherever the term "Owner" is used in the Specifications and/or the Contract Drawings, such term shall mean the City of New York.
- (2) Other Entities: In the event any entity other than the City of New York is referred to or named as the "Owner" in the Specifications and/or the Contract Drawings, the name of such other entity is deemed deleted and replaced with the "City of New York".
- (3) Architect / Engineer: Wherever the words "Architect", "Engineer", "Architect / Engineer" or "Architect and/or Engineer" are used in the Specifications and/or the Contract Drawings, such words are deemed deleted and replaced with the word "Commissioner".
- (4) Products / Manufacturers: Wherever the Specifications and/or the Contract Drawings require the contractor to provide a particular product (i.e., material and/or equipment) from a designated manufacturer and/or vendor, the term "or approved equal" is deemed inserted, even if only one product and/or manufacturer is specified, except as otherwise provided below.
 - (a) Proprietary Items: If the Bid Booklet contains a Notice which identifies a particular product from a designated manufacturer as a "Proprietary Item", the Contractor shall be required to provide such specified product. In such case, no substitution or "approved equal" will be permitted.
- (5) Special Experience Requirements: Special Experience Requirements for the Project, if any, are set forth in the Bid Booklet. Special Experience Requirements may apply to contractors, subcontractors, installers, manufacturers and/or suppliers. If the Specifications and/or the Contract Drawings contain any Special Experience Requirement that is not set forth in the Bid Booklet, such Special Experience Requirement is deemed deleted, except as otherwise provided below.
 - (a) Any Special Experience Requirement that provides that the entity performing the work or supplying the material must have more than three (3) years of experience, is revised to provide that the entity performing the work or supplying the material must have three (3) years of experience, except as described in paragraph (b) below.
 - (b) Any Special Experience Requirement that pertains to the abatement of hazardous materials shall not be subject to the deletion and/or revision set forth above. Such Special Experience Requirement shall remain in full force and effect.
 - (c) Any Special Experience Requirement that provides that the entity performing the work must be licensed, authorized, certified, approved by or acceptable to the manufacturer, is deemed deleted and replaced with the requirement that such entity must be properly trained for the specified work.
 - (d) Any Special Experience Requirement that provides that the individual workers performing the work must be licensed, authorized, certified, approved by or acceptable to the manufacturer, is deemed deleted and replaced with the requirement that such individual workers must be properly trained for the specified work.
- (6) Alternate Bids: If the agency is requesting the submission of Alternate Bids, a Notice regarding such Alternate Bids is set forth in the Bid Booklet. In the event of any conflict or inconsistency between (1) the Notice regarding Alternate Bids set forth in the Bid Booklet and (2) a provision in the Specifications and/or the Contract Drawings regarding Alternate Bids, the Notice set forth in the Bid Booklet shall prevail. If the agency is not requesting the submission of Alternate Bids, as indicated by the absence of a Notice in the Bid Booklet, and the Specifications and/or the Contract Drawings contain any provision regarding Alternate Bids, such provision is deemed deleted.
- (7) Contractor Retained Engineer: If the Specifications and/or the Contract Drawings require the Contractor to retain an Engineer to provide engineering services for the Project, the following sentence is deemed inserted: "Such Engineer must be a Professional Engineer, licensed in the State of New York."

- (8) **LEED Related Provisions:** If the Specifications and/or the Contract Drawings require the Contractor to purchase FSC certified wood, rapidly renewable materials, or materials within 500 miles, such provisions are deemed deleted and replaced with the requirement that if the contractor has purchased FSC certified wood, rapidly renewable materials, or materials within 500 miles, the contractor shall submit such forms or documentation as may be required by the City in order for the USGBC to certify that the Project qualifies for the related LEED credit(s).
- (9) **Guarantees:** Requirements for Guarantees and Maintenance are set forth in Schedule B, which is included in the Addendum to the General Conditions. In the event of any conflict or inconsistency between (1) a guarantee and/or maintenance requirement set forth in the Specifications and/or the Contract Drawings and (2) a guarantee and/or maintenance requirement set forth in Schedule B, the guarantee and/or maintenance requirement set forth in Schedule B shall prevail.
- (10) **Warranties:** Requirements for Warranties are set forth in Schedule B, which is included in the Addendum to the General Conditions.
- (a) In the event of any conflict or inconsistency between (1) a warranty requirement set forth in the Specifications and/or the Contract Drawings and (2) a warranty requirement set forth in Schedule B, the warranty requirement set forth in Schedule B shall prevail.
- (b) In the event a warranty requirement set forth in the Specifications and/or the Contract Drawings is omitted from Schedule B, such omission from Schedule B shall have no effect and the Contractor's obligation to provide the manufacturer's warranty, as set forth in the Specifications and/or the Contract Drawings, shall remain in full force and effect.
- (c) In the event a warranty requirement for a particular item of material or equipment is omitted from Schedule B, as well as from the Specifications or the Contract Drawings, and the manufacturer of such item actually provides a warranty, the Contractor shall be obligated to obtain and deliver to the Commissioner the highest level of warranty actually provided by that manufacturer.
- (11) **Exculpatory Provisions:** In the event the Specifications and/or the Contract Drawings contain any provision whereby the consultant and/or any of its officers, employees or agents, including subconsultants, is absolved of responsibility for any act or omission, such provision is deemed deleted.
- (12) **Insurance:** Provisions regarding insurance coverage the Contractor is required to provide are set forth in Article 22 of the City of New York Standard Construction Contract and Schedule A, which is included in the Addendum to the General Conditions. In the event the Specifications and/or the Contract Drawings contain any provision regarding insurance requirements, such provision is deemed deleted.
- (13) **Indemnification:** Provisions regarding indemnification are set forth in Articles 7, 12, 22 and 57 of the City of New York Standard Construction Contract. In the event the Specifications and/or the Contract Drawings contain any provision regarding indemnification, such provision is deemed deleted.
- (14) **Dispute Resolution:** Provisions regarding dispute resolution are set forth in Article 27 of the City of New York Standard Construction Contract. In the event the Specifications and/or the Contract Drawings contain any provision regarding dispute resolution, such provision is deemed deleted.
- (15) **Payment to Other Entities:** In the event the Specifications and/or the Contract Drawings contain any provision which requires the Contractor to make payments to an entity other than a subcontractor and/or supplier providing services and/or material for the project, such provision is deemed deleted.
- (16) **General Conditions:** In the event of any conflict or inconsistency between (1) the Specifications and/or the Contract Drawings and (2) the General Conditions, the General Conditions shall prevail.
- (17) **Standard Construction Contract:** In the event of any conflict or inconsistency between (1) the Specifications and/or the Contract Drawings and (2) the City of New York Standard Construction Contract, the City of New York Standard Construction Contract shall prevail.

SCHEDULE A (FOR PUBLICLY BID PROJECTS)
Contract Requirements

Various Articles of the Contract refer to requirements which are set forth in Schedule A of the General Conditions. The Schedule set forth below specifies the following: (1) the referenced Articles of the Contract, and (2) the specific requirements applicable to each separate contract.

REFERENCE	ITEM	REQUIREMENTS	CONTRACT #1
Information For Bidders	Bid Security		See Attachment 1 – Bid Information in the Bid Booklet
Information For Bidders	Performance and Payment Bonds		See Attachment 1- Bid Information in the Bid Booklet
Article 14 Contract	Time of Completion	Consecutive Calendar Days	480 ccds
Article 15 Contract	Liquidated Damages	For each consecutive calendar day over completion time	400
Article 17 Contract	Sub-Contracts	Not to exceed Percent of Contract Price	60%
Article 21 Contract	Retainage	Percent of Voucher	If 100% bonds are required 5% If 100% bonds are not required, and Contract Price is \$1,000,000 or less 5% If 100% bonds are not required, and Contract Price is more than \$1,000,000 10%
Article 24 Contract	Deposit Guarantee	Percent of Contract Price	1%
Article 24 Contract	Period of Guarantee		See Schedule B of the Addendum to the General Conditions
Article 74 Contract	Statement of Work		See Contract Article 74
Article 75 Contract	Compensation to be Paid to Contractor		See Contract Article 75
Article 78 Contract	MWBE Program		See MWBE Utilization Plan in the Bid Booklet

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions

Note: All certificate(s) of insurance submitted pursuant to Contract Article 22.3. 3 must be accompanied by a Certification by Broker consistent with Part III below and include the following information:

- For each insurance policy, the name and NAIC number of issuing company, number of policy, and effective dates;
- Policy limits consistent with the requirements listed below;
- Additional insureds or loss payees consistent with the requirements listed below; and
- The number assigned to the Contract by the City (in the "Description of Operations" field).

Insurance indicated by a blackened box (■) or by (X) in the to left will be required under this contract.

Types of Insurance (per Article 22 in its entirety, including listed paragraph)	Minimum Limits and Special Conditions
<p>■ Commercial General Liability Art. 22.1.1</p>	<p>The minimum limits shall be \$1,000,000.00 per occurrence and \$2,000,000.00 per project aggregate applicable to this Contract.</p> <p>Additional Insureds:</p> <ol style="list-style-type: none"> 1. City of New York, including its officials and employees, with coverage at least as broad as ISO Forms CG 20 10 and CG 20 37, and 2. All person(s) or organization(s), if any, that Article 22.1.1(b) of the Contract requires to be named as Additional Insured(s), with coverage at least as broad as ISO Form CG 20 26. The Additional Insured endorsement shall either specify the entity's name, if known, or the entity's title (e.g., Project Manager). 3. The Harlem School of Arts, Inc.
<p>■ Workers' Compensation Art. 22.1.2</p> <p>■ Disability Benefits Insurance Art. 22.1.2</p> <p>■ Employers' Liability Art. 22.1.2</p> <p><input type="checkbox"/> Jones Act Art. 22.1.3</p> <p><input type="checkbox"/> U.S. Longshoremen's and Harbor Workers Compensation Act Art. 22.1.3</p>	<p>Workers' Compensation, Employers' Liability, and Disability Benefits Insurance: Statutory per New York State law without regard to jurisdiction.</p> <p>Note: The following forms are acceptable: (1) New York State Workers' Compensation Board Form No. C-105.2, (2) State Insurance Fund Form No. U-26.3, (3) New York State Workers' Compensation Board Form No. DB-120.1 and (3) Request for WC/DB Exemption Form No. CE-200. The City will not accept an ACORD form as proof of Workers' Compensation or Disability Insurance.</p> <p>Jones Act and U.S. Longshoremen's and Harbor Workers' Compensation Act: Statutory per U.S. law.</p>

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions (Continued)

Insurance indicated by a blackened box (■) or by (X) in the to left will be required under this contract.

Types of Insurance (per Article 22 in its entirety, including listed paragraph)	Minimum Limits and Special Conditions
<input type="checkbox"/> Hull and Machinery Insurance Art. 22.1.7(b)	\$ _____ per occurrence \$ _____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
<input type="checkbox"/> Marine Pollution Liability Art. 22.1.7(c)	\$ _____ each occurrence Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
[OTHER] Art. 22.1.8 <input type="checkbox"/> Ship Repairers Legal Liability	\$ _____ each occurrence [Contracting agency to fill in total value of City vessels involved]
[OTHER] Art. 22.1.8 <input type="checkbox"/> Collision Liability/Towers Liability	\$ _____ per occurrence \$ _____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
[OTHER] Art. 22.1.8 <input type="checkbox"/> Railroad Protective Liability	\$ _____ per occurrence \$ _____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions (Continued)

Insurance indicated by a blackened box (■) or by (X) in the to left will be required under this contract.

<p>[OTHER] Art. 22.1.8</p> <p><input type="checkbox"/> Asbestos Liability _____</p>	<p>Only required of the Contractor or Subcontractor performing any required asbestos removal.</p> <p>\$1,000,000 each occurrence; \$2,000,000 aggregate (Combined Single Limit); only required of the Contractor or Subcontractor performing any required asbestos removal.</p> <p>Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____</p>
<p>[OTHER] Art. 22.1.8</p> <p>■ Boiler Insurance _____</p>	<p>\$200,000</p>
<p>[OTHER] Art. 22.1.8</p> <p>■ Professional Liability</p> <p>In the event any section of the Specifications requires the Contractor to engage a Professional Engineer to provide design and/or engineering services, the Engineer engaged by the Contractor, as well as any sub consultant(s) performing professional services, shall provide Professional Liability Insurance.</p>	<p>\$1,000,000 per occurrence</p> <p>The Contractor's Professional Engineer shall maintain and submit evidence of Professional Liability Insurance in the minimum amount of \$1,000,000 per claim. The policy or policies shall include an endorsement to cover the liability assumed by the Contractor under this Agreement arising out of the negligent performance of professional services or caused by an error, omission or negligent act of the Contractor's Professional Engineer or anyone employed by the Contractor's Professional Engineer.</p> <p>Claims-made policies will be accepted for Professional Liability Insurance. All such policies shall have an extended reporting period option or automatic coverage of not less than two (2) years. If available as an option, the Contractor's Professional Engineer shall purchase extended reporting period coverage effective on cancellation or termination of such insurance unless a new policy is secured with a retroactive date, including at least the last policy year.</p>

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART III. Certificates of Insurance

All certificates of insurance (except certificates of insurance solely evidencing Workers' Compensation Insurance, Employer's Liability Insurance, and/or Disability Benefits Insurance) must be accompanied by one of the following:

- (1) the Certification by Insurance Broker or Agent on the following page setting forth the required information and signatures;

– OR –

- (2) copies of all policies as certified by an authorized representative of the issuing insurance carrier that are referenced in such certificate of insurance. If any policy is not available at the time of submission, certified binders may be submitted until such time as the policy is available, at which time a certified copy of the policy shall be submitted.

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART III. Certification by Insurance Broker or Agent

The undersigned insurance broker or agent represents to the City of New York that the attached Certificate of Insurance is accurate in all material respects.

[Name of broker or agent (typewritten)]

[Address of broker or agent (typewritten)]

[Email address of broker or agent (typewritten)]

[Phone number/Fax number of broker or agent (typewritten)]

[Signature of authorized official or broker or agent]

[Name and title of authorized official, broker or agent (typewritten)]

State of)
) ss:
County of)

Sworn to before me this
___ day of _____, 20__

NOTARY PUBLIC FOR THE STATE OF _____

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART IV. Address of Commissioner

Wherever reference is made in Article 7 or Article 22 to documents to be sent to the **Commissioner** (e.g., notices, filings, or submissions), such documents shall be sent to the address set forth below or, in the absence of such address, to the **Commissioner's** address as provided elsewhere in this **Contract**.

ACCO's Office, Insurance Unit

30-30 Thomson Avenue, 4th Floor

Long Island City, New York 11101

SCHEDULE B

Guarantees and Warranties

(Reference: Section 01 7839, Article 2.7 of the DDC Standard General Conditions)

GUARANTY FROM CONTRACTOR

(1) **Contractor's Guaranty Obligation:** The Contractor shall promptly repair, replace, restore or rebuild, as the Commissioner may determine, any finished Work in which defects of materials or workmanship may appear or to which damage may occur because of such defects, during the one (1) year period subsequent to the date of Substantial Completion (or use and occupancy in accordance with the Contract), except for the areas of Work set forth below:

- Roofing, Waterproofing, and Joint Sealant Work. For these types of work, the guarantee period shall be (2) two years.
- Trees and/or Plant Material. For trees and/or plant material furnished and installed, the guarantee period shall be (2) two years. During the guarantee period, the Contractor shall provide all maintenance services set forth in the Specifications.

(2) **Guaranty Period:** The obligation of the Contractor, and its Surety under the Performance Bond, is limited to the period(s) of time specified above.

(3) **Other Provisions Deemed Deleted:** In the event the Specifications and/or the Contract Drawings contain any provisions regarding guaranty requirements, such provisions are deemed deleted and replaced with the guaranty requirements set forth in this Schedule B.

WARRANTY FROM MANUFACTURER

(1) **Contractor's Obligation to Provide Warranties:** The items of material and/or equipment for which manufacturer warranties are required are listed below. For each item of material and/or equipment listed below, the Contractor shall obtain a written warranty from the manufacturer. Such warranty shall provide that the material or equipment is free from defects for the period set forth below and will be replaced or repaired within such specified period. The Contractor shall deliver all required warranties to the Commissioner.

(2) **Required Warranties:**

Specification Number	Material or Equipment	Warranty Period
07 51 00	Built-Up Roofing	20 years
07 92 00	Silicone Sealants	20 years
07 92 00	Polyurethane or Silicone	5 years
08 11 02	Steel Doors and Frames	1 year
08 11 16	Aluminum Doors and Frames	1 year
08 71 00	Finish Hardware	1 year
22 14 29	Sump Pump, Submersible	5 years
22 33 01	Domestic Water Heater (Glass Lined Tank)	3 years

22 44 53	Pumps	5 years
23 05 01	General Equipment, Workmanship, Material	1 year
23 09 23	Temperature Control System	1 year (48 hours repair period)
23 21 23	Hydronic Pumps	5 years
23 33 13	Dampers (Actuator)	5 years
23 34 00	Centrifugal Fans	2 years
23 52 23	Cast Iron Boiler	10 years
23 52 24	Fuel Burning Equipment Burner	1 years 2 year
23 63 13	Air Cooled Condensing Unit	2 years (5 years compressor)
23 73 13	Air Handling Units	2 years
23 81 06	Packaged Rooftop Unit Refrigeration Compressors	2 years 5 years
26 05 01	General provisions for Electrical Work	5 Years
26 24 19	Motors, Starters and Control Equipment	5 years
31 23 43	EPS Geofoam	10 years

(3) **Application:** The obligations under the warranty for the periods specified above shall apply only to the manufacturer of the material or equipment, and not to the Contractor or its Surety; provided, however, the Contractor retains responsibility for obtaining all required warranties from the manufacturers and delivering the same to the Commissioner.

(4) **Other Provisions:** The warranty requirements set forth in this Schedule B are also included in the Specifications.

- (a) In the event of any conflict between a warranty requirement set forth in the Specifications and a warranty requirement set forth in Schedule B, the warranty requirement set forth in Schedule B shall take precedence.
- (b) In the event a warranty requirement set forth in the Specifications is omitted from Schedule B, such omission from Schedule B shall have no effect and the Contractor's obligation to provide the manufacturer's warranty, as set forth in the Specifications, shall remain in full force and effect
- (c) In the event a warranty requirement for a particular item of material or equipment is omitted from both Schedule B and the Specifications, and the manufacturer of such item actually provides a warranty, the Contractor shall be obligated to obtain and deliver to the Commissioner the highest level of warranty actually provided by that manufacturer.
- (d) In the event a warranty requirement is provided for a particular item of material or equipment, and such requirement specifies a warranty period that is longer than that which is actually provided by any of the specified manufacturers, the Contractor shall be obligated to obtain and deliver to the Commissioner the highest level of warranty actually provided by any of the specified manufacturers,

unless otherwise directed in writing by the Commissioner.

- (e) Unless indicated otherwise Warranties are to take effect on the date of Substantial Completion.

SCHEDULE C

Contract Drawings

(Reference: Section 01 1000, Article 1.5 (A) of the DDC Standard General Conditions)

The Schedule set forth below lists all Contract Drawings for the Project.

1. <u>HARLEM SCHOOL OF ARTS:</u>	
T-001.00	TITLE SHEET
<u>ARCHITECTURAL DRAWINGS</u>	
DM-001.00	FIRST FLOOR PLAN DEMOLITION
DM-002.00	SECOND FLOOR PLAN DEMOLITION
DM-003.00	DEMOLITION. ROOF OVER 2 ND FL.
DM-004.00	FIRST FLOOR PLAN DEMOLITION
A-001.00	FIRST FLOOR PLAN
A-002.00	SECOND FLOOR PLAN
A-003.00	ROOF OVER 2 ND FL. AND 3 RD FL. PLAN
A-004.00	EAST ELEVATION, SECTION, AND HAND RAILS VIEW
A-005.00	ENLARGED PLANS
A-006.00	SECTIONS AND DETAILS
A-007.00	SECTIONS AND DETAILS
A-008.00	SECTIONS AND DETAILS
A-009.00	PARTITION DETAILS
A-010.00	DOOR AND WINDOW SCHEDULES
A-011.00	ELEVATOR CAB - INTERIOR FINISH
A-012.00	Not Used
A-013.00	TOILET PLANS AND ELEVATIONS
A-101.00	NEW ELEVATOR PLAN AND SECTION
<u>STRUCTURAL DRAWINGS</u>	
S-001.00	GENERAL AND STRUCTURAL NOTES
DM-004.00	FIRST FLOOR PLAN DEMOLITION
DM-005.00	SECOND FLOOR PLAN DEMOLITION
DM-006.00	DEMOLITION ROOF OVER 2 ND FL.
S-002.00	FIRST FLOOR PLAN
S-003.00	SECOND FLOOR PLAN
S-004.00	ROOF OVER 2 ND FL. AND 3 RD FL. PLAN
S-005.00	SECTIONS AND DETAILS
S-006.00	SECTIONS AND DETAILS
S-007.00	ACOUSTICAL BARRIERS. PLANS AND ELEVATIONS.
S-008.00	ACOUSTICAL BARRIERS. SECTION AND DETAILS
S-009.00	ACOUSTICAL BARRIERS. ROOF PENETRATIONS AND CURB SUPPORTS

	<u>MECHANICAL DRAWINGS</u>
EN-001.00	ECCC-NYS COMPLIANCE -COMCHECK
EN-002	ECCC-NYS COMPLIANCE -COMCHECK
M-001.00	MECHANICAL NOTES, SYMBOLS LIST AND ABBREVIATIONS
DM-007.00	HVAC - DEMOLITION BASEMENT AND BOILER ROOM PLANS
DM-008.00	HVAC - DEMOLITION FIRST FLOOR PLAN
DM-009.00	HVAC - DEMOLITION SECOND FLOOR PLAN
DM-010.00	HVAC - DEMOLITION ROOF / 3RD FLOOR PLAN
M-002.00	HVAC - CELLAR, BOILER ROOM AND UPPER ROOF PLANS
M-003.00	HVAC - FIRST FLOOR PLAN
M-004.00	HVAC - SECOND FLOOR PLAN
M-005.00	HVAC - THIRD FLOOR PLAN
M-006.00	HVAC - DETAILS
M-007.00	HVAC - DETAILS
M-008.00	HVAC - CONTROL SCHEMATICS
M-009.00	HVAC - EQUIPMENT SCHEDULES
	<u>PLUMBING DRAWINGS</u>
P-001.00	PLUMBING NOTES, SYMBOLS LIST AND ABBREVIATIONS
DM-011.00	PLUMBING DEMOLITION FIRST FLOOR PLAN
DM-012.00	PLUMBING DEMOLITION SECOND FLOOR PLAN
DM-013.00	PLUMBING DEMOLITION THIRD FLOOR PLAN
P-002.00	PLUMBING FIRST FLOOR PLAN
P-003.00	PLUMBING SECOND FLOOR PLAN
P-003.A.00	A.D.A. TOILET ROOM ENLARGED PLANS AND RISERS.
P-004.00	PLUMBING THIRD FLOOR AND ROOF PLAN
	<u>ELECTRICAL DRAWINGS</u>
E-001.00	ELECTRICAL NOTES, SYMBOLS LIST AND ABBREVIATIONS
DM-014.00	ELECTRICAL 1ST, 2ND AND 3RD FLOOR PLANS - DEMOLITION
DM-015.00	ELECTRICAL POWER RISER DEMOLITION
E-002.00	ELECTRICAL - CELLAR AND 1ST FLOOR PLANS
E-003.00	ELECTRICAL - 2ND, 3RD FLOORS AND ROOF PLANS
E-004.00	ELECTRICAL - ELEVATOR DETAILS
E-005.00	ELECTRICAL - RISER DIAGRAM
E-006.00	ELECTRICAL - SCHEDULES
E-007.00	ELECTRICAL - DETAILS
	<u>FIRE ALARM</u>
FA-001.00	FIRE ALARM- NOTES, SYMBOLS, AND ABBREVIATIONS
FP-002.00	FIRE ALARM- CELLAR AND FIRST FLOOR PLANSPLAN
FP-003.00	FIRE ALARM- SECOND, THIRD AND ROOF PART PLANS

SCHEDULE D

Electrical Motor Control Equipment

(Reference: 01 3506, Article 3.8 of the DDC Standard General Conditions)

Requirements for electrical motor equipment may be included in one or more sections of the Specifications for the Contract for the Project. Schedule D set forth below delineates specific information for electrical motor control equipment. In the event of any conflict between the Specifications and this Schedule D, Schedule D shall take precedence; provided, however, in the event of an omission from Schedule D (i.e., Schedule D omits either a reference to or information concerning electrical motor equipment which is set forth in the Specifications), such omission from Schedule D shall have no effect and the Contractor's obligation with respect to the electrical motor control equipment, as set forth in the Specifications, shall remain in full force and effect.

DB Disconnect Circuit Breaker (Switch)	P Pilot Light	BG Break Glass Station
TS Thermal Switch	F Firestat	HOA Hand-Off Auto.
MS Magnetic Starter	T Thermostat	PB Push Button Station
CMS Comb. Mag. Starter	AL Alternator	RO Remote "off"

Equip. Ident.	Location	# of Units	HP or KW	Volts and Phase	Control Type: See legend above	Remarks:
ELEVATOR	EMR, 1 ST FLOOR	1	30HP	208V, 3 Ph	CMS	
HVAC-2	ROOF	1	54.93 KW	208V, 3 Ph	DS	
HVAC-3	ROOF	1	38.88 KW	208V, 3 Ph	DS	
HVAC-4	ROOF	1	88.15 KW	208V, 3 Ph	DS	
HVAC-5	ROOF	1	7.97 KW	208V, 3 Ph	DS	
AHU-1	EMR, 1 ST FLOOR	1	0.035 KW	208V, 1 Ph	DS	
ACCU-1	ROOF	1	2.46 KW	208V, 1 Ph	DS	
P-1, P-2	Boiler Room, 3 rd FLOOR	1+1	3 HP	208V, 3 Ph	DS/VSD	Lead-Lag Pkg
RP-1	Boiler Room, 3 rd FLOOR	1	1/6 HP	120V, 1 Ph	MS	

CP-1	EMR, 1 ST FLOOR	1	1/30 HP	208V, 1 Ph	DS	
SP-1	ELEVATOR, PIT	1	1/3 HP	120V, 1 Ph	DS	
EF-1	ELEVATOR, ROOF	1	0.25 HP	120V, 1 Ph	DS	
BOILER	Boiler Room, 3 rd FLOOR	1	1	120V, 1 Ph	BG	

SCHEDULE E

Separation of Trades

NOT USED FOR SINGLE CONTRACTS

SCHEDULE F

Submittals Schedule

(Reference: Section 01 3300 Article 1.5 (C) of the General Conditions)

The Schedule set forth below lists all submittal requirements for the Contract. In the event of any conflict between the Specifications and this Schedule F, Schedule F shall take precedence; provided, however, in the event of an omission from Schedule F (i.e., Schedule F omits either a reference to or information concerning a submittal requirement which is set forth in the Specifications), such omission from Schedule F shall have no effect and the Contractor's submittal obligation, as set forth in the Specifications, shall remain in full force and effect.

CONSULTANT:
 TELEPHONE NUMBER: _____
 DDC PROJECT MANAGER:
 TELEPHONE NUMBER: _____

DATE: _____
 APPROVED: _____
 (DDC RESIDENT ENGINEER/CPM)

REPORT DATE	SPEC. SECT. #	DESCRIPTION	FMS ID #/PROJECT ID #/ CONTRACT REGISTRATION #/ PROJECT NAME:	SUBMITTAL			SUB. DATE	REQ'D DEL.	FABRIC. TIME	Contract 1 - GENERAL CONSTRUCTION																
				COORD. WITH CONTR.	SHOP Dwg	SAMPLE				CS	REC'D	RETD	ACTION	REC'D	RETD	ACTION	REC'D	RETD	ACTION							
	01 3526	Safety and Health Program	X																							
	01 3526	Contractor's Safety Plan	X																							
	01 3526	Historic Treatment Plan	X																							
	01 5000	Site Plan		X																						
	01 5000	Reports	X																							
	01 5423	NYC DOB Scaffold & Sidewalk Shed Permits	X	X																						
	01 5423	Site Logistics/Site Safety Plan	X																							

01 5423	Scaffold & Shed Installation Drawings	X																	
01 5423	Instruction Program for Demonstration & Orientation	X																	
01 7900	Qualification Data	X																	
01 7900	Selective Removal and Demolition	X																	
024119	Cast in Place Concrete	X				X													
033000	Unit Masonry	X		X															
042000	Structural Steel	X					X												
051200	Fluted Steel Deck	X					X												
053100	Metal Fabrication	X					X												
055000	Wood Nailers and Blocking	X					X												
061053	Maintenance of Membrane Roofing	X					X												
070150	Cementitious Waterproofing						X												
071613	Built-up Bituminous Roofing	X					X												
075100	Flushing and sheet metal	X							X										
076100	Firestopping Smoke Seals																		
078400	Joint Sealers																		X

HIRING AND EMPLOYMENT RIDER:
HIRENYC AND REPORTING REQUIREMENTS

Introduction

This Rider shall apply to all contracts for goods, services, and construction with a value of one million dollars (\$1,000,000.00) or more, provided, however, that certain requirements of the Rider shall only apply as indicated below. This Rider addresses the HireNYC process, including reporting obligations under the HireNYC process, and certain other reporting requirements imposed by law. In general, the HireNYC process under this Rider requires the Contractor to enroll with the HireNYC portal for the City of New York ("the City") found within the Department of Small Business Services's ("SBS") website, to disclose all entry to mid-level job opportunities described in this Rider arising from this contract and located in New York City, and to agree to interview qualified candidates from HireNYC for those opportunities.

HireNYC Requirements

A. Enrollment

The Contractor shall enroll with the HireNYC system, found at www.nyc.gov/sbs, within thirty (30) days after the registration of this Contract pursuant to Section 328 of the New York City Charter. The Contractor shall provide information about the business, designate a primary contact and say whether it intends to hire for any entry to mid-level job opportunities arising from this contract and located in New York City, and, if so, the approximate start date of the first hire.

B. Job Posting Requirements

Once enrolled in HireNYC, the Contractor agrees to update the HireNYC portal with all entry to mid-level job opportunities arising from this contract and located in New York City, if any, which shall be defined as jobs requiring no more than an associate degree, as provided by the New York State Department of Labor (see Column F of <https://labor.ny.gov/stats/2012-2022-NYS-Employment-Prospects.xls>). The information to be updated includes the types of entry and mid-level positions made available from the work arising from the contract and located in New York City, the number of positions, the anticipated schedule of initiating the hiring process for these positions, and the contact information for the Contractor's representative charged with overseeing hiring. The Contractor must update the HireNYC portal with any hiring needs arising from the contract and located in New York City, and the requirements of the jobs to be filled, no less than three weeks prior to the intended first day of employment for each new position, except with the permission of SBS, not to be unreasonably withheld, and must also update the HireNYC portal as set forth below.

After enrollment through HireNYC and submission of relevant information, SBS will work with the Contractor to develop a recruitment plan which will outline the candidate screening process,

and will provide clear instructions as to when, where, and how interviews will take place. HireNYC will screen applicants based on employer requirements and refer applicants whom it believes are qualified to the Contractor for interviews. The Contractor must interview referred applicants whom it believes are qualified.

After completing an interview of a candidate referred by HireNYC, the Contractor must provide feedback via the portal within twenty (20) business days to indicate which candidates were interviewed and hired, if any. In addition, the Contractor shall provide the start date of new hires, and additional information reasonably related to such hires, within twenty (20) business days after the start date. In the event the Contractor does not have any job openings covered by this Rider in any given year, the Contractor shall be required to provide an annual update to HireNYC to that effect. For this purpose, the reporting year shall run from the date of the registration of the contract and each anniversary date.

These requirements do not limit the Contractor's ability to assess the qualifications of prospective workers, and to make final hiring and retention decisions. No provision of this Rider shall be interpreted so as to require the Contractor to employ any particular worker.

In addition, the provisions of this Rider shall not apply to positions that the Contractor intends to fill with employees employed pursuant to the job retention provision of Section 22-505 of the Administrative Code of the City of New York. The Contractor shall not be required to report such openings with HireNYC. However, the Contractor shall enroll with the HireNYC system pursuant to Section A, above, and, if such positions subsequently become open, then the remaining provisions of this Rider will apply.

C. Breach and Liquidated Damages

If the Contractor fails to comply with the terms of the contract and this Rider (1) by not enrolling its business with HireNYC; (2) by not informing HireNYC, as required, of open positions; or (3) by failing to interview a qualified candidate, the contracting agency may assess liquidated damages in the amount of two-thousand five hundred dollars (\$2,500.00) per breach. For all other events of noncompliance with the terms of this Rider, the agency may assess liquidated damages in the amount of five hundred dollars (\$500) per breach.

Furthermore, in the event the Contractor breaches the requirements of this Rider during the term of the contract, the City may hold the Contractor in default of this contract.

Audit Compliance

In addition to the auditing requirements set forth in other parts of the contract, the Contractor shall permit SBS and the City to inspect any and all records concerning or relating to job openings or the hiring of individuals for work arising from the contract and located in New York City. The Contractor shall permit an inspection within seven (7) business days of the request.

Other Reporting Requirements

The Contractor shall report to the City, on a monthly basis, all information reasonably requested by the City that is necessary for the City to comply with any reporting requirements imposed by law or rule, including any requirement that the City maintain a publicly accessible database. In addition, the Contractor agrees to comply with all reporting requirements imposed by law or rule, or as otherwise requested by the City.

Construction Requirements

Construction contractors shall comply with the HireNYC requirements set forth above for all non-trades jobs (e.g., for an administrative position arising out of the work of the contract and located in New York City) as set forth above.

In addition, construction contractors shall reasonably cooperate with SBS and the City on specific outreach events, including Hire on the Spot events, for the hiring of trades workers for the work of this contract.

Further, this contract shall be subject to a project labor agreement if so required elsewhere in this contract.

Federal Hiring Requirements

The Contractor shall comply with all federal hiring requirements as may be set forth elsewhere in this contract, including, as applicable:

- Section 3 of the HUD Act of 1968, which requires, to the greatest extent feasible, economic opportunities for 30 percent of new hires be given to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing.
- Executive Order 11246, which prohibits discrimination in employment due to race, color, religion, sex or national origin, and requires the implementation of goals for minority and female participation for work involving any Construction trade.

PAID SICK LEAVE LAW CONTRACT RIDER

Introduction and General Provisions

The Earned Sick Time Act, also known as the Paid Sick Leave Law ("PSLL"), requires covered employees who annually perform more than 80 hours of work in New York City to be provided with paid sick time.¹ Contractors of the City of New York or of other governmental entities may be required to provide sick time pursuant to the PSLL.

The PSLL became effective on April 1, 2014, and is codified at Title 20, Chapter 8, of the New York City Administrative Code. It is administered by the City's Department of Consumer Affairs ("DCA"); DCA's rules promulgated under the PSLL are codified at Chapter 7 of Title 6 of the Rules of the City of New York ("Rules").

Contractor agrees to comply in all respects with the PSLL and the Rules, and as amended, if applicable, in the performance of this agreement. Contractor further acknowledges that such compliance is a material term of this agreement and that failure to comply with the PSLL in performance of this agreement may result in its termination.

Contractor must notify the Agency Chief Contracting Officer of the City agency or other entity with whom it is contracting in writing within ten (10) days of receipt of a complaint (whether oral or written) regarding the PSLL involving the performance of this agreement. Additionally, Contractor must cooperate with DCA's education efforts and must comply with DCA's subpoenas and other document demands as set forth in the PSLL and Rules.

The PSLL is summarized below for the convenience of Contractor. Contractor is advised to review the PSLL and Rules in their entirety. On the website www.nyc.gov/PaidSickLeave there are links to the PSLL and the associated Rules as well as additional resources for employers, such as Frequently Asked Questions, timekeeping tools and model forms, and an event calendar of upcoming presentations and webinars at which Contractor can get more information about how to comply with the PSLL. Contractor acknowledges that it is responsible for compliance with the PSLL notwithstanding any inconsistent language contained herein.

Pursuant to the PSLL and the Rules:

Applicability, Accrual, and Use

An employee who works within the City of New York for more than eighty hours in any consecutive 12-month period designated by the employer as its "calendar year" pursuant to the PSLL ("Year") must be provided sick time. Employers must provide a minimum of one hour of sick time for every 30 hours worked by an employee and compensation for such sick time must

¹ Pursuant to the PSLL, if fewer than five employees work for the same employer, as determined pursuant to New York City Administrative Code §20-912(g), such employer has the option of providing such employees uncompensated sick time.

be provided at the greater of the employee's regular hourly rate or the minimum wage. Employers are not required to provide more than forty hours of sick time to an employee in any Year.

An employee has the right to determine how much sick time he or she will use, provided that employers may set a reasonable minimum increment for the use of sick time not to exceed four hours per day. In addition, an employee may carry over up to forty hours of unused sick time to the following Year, provided that no employer is required to allow the use of more than forty hours of sick time in a Year or carry over unused paid sick time if the employee is paid for such unused sick time and the employer provides the employee with at least the legally required amount of paid sick time for such employee for the immediately subsequent Year on the first day of such Year.

An employee entitled to sick time pursuant to the PSSL may use sick time for any of the following:

- such employee's mental illness, physical illness, injury, or health condition or the care of such illness, injury, or condition or such employee's need for medical diagnosis or preventive medical care;
- such employee's care of a family member (an employee's child, spouse, domestic partner, parent, sibling, grandchild or grandparent, or the child or parent of an employee's spouse or domestic partner) who has a mental illness, physical illness, injury or health condition or who has a need for medical diagnosis or preventive medical care;
- closure of such employee's place of business by order of a public official due to a public health emergency; or
- such employee's need to care for a child whose school or childcare provider has been closed due to a public health emergency.

An employer must not require an employee, as a condition of taking sick time, to search for a replacement. However, an employer may require an employee to provide: reasonable notice of the need to use sick time; reasonable documentation that the use of sick time was needed for a reason above if for an absence of more than three consecutive work days; and/or written confirmation that an employee used sick time pursuant to the PSSL. However, an employer may not require documentation specifying the nature of a medical condition or otherwise require disclosure of the details of a medical condition as a condition of providing sick time and health information obtained solely due to an employee's use of sick time pursuant to the PSSL must be treated by the employer as confidential.

If an employer chooses to impose any permissible discretionary requirement as a condition of using sick time, it must provide to all employees a written policy containing those requirements, using a delivery method that reasonably ensures that employees receive the policy. If such employer has not provided its written policy, it may not deny sick time to an employee because of non-compliance with such a policy.

Sick time to which an employee is entitled must be paid no later than the payday for the next regular payroll period beginning after the sick time was used.

Exemptions and Exceptions

Notwithstanding the above, the PSLL does not apply to any of the following:

- an independent contractor who does not meet the definition of employee under section 190(2) of the New York State Labor Law;
- an employee covered by a valid collective bargaining agreement in effect on April 1, 2014 until the termination of such agreement;
- an employee in the construction or grocery industry covered by a valid collective bargaining agreement if the provisions of the PSLL are expressly waived in such collective bargaining agreement;
- an employee covered by another valid collective bargaining agreement if such provisions are expressly waived in such agreement and such agreement provides a benefit comparable to that provided by the PSLL for such employee;
- an audiologist, occupational therapist, physical therapist, or speech language pathologist who is licensed by the New York State Department of Education and who calls in for work assignments at will, determines his or her own schedule, has the ability to reject or accept any assignment referred to him or her, and is paid an average hourly wage that is at least four times the federal minimum wage;
- an employee in a work study program under Section 2753 of Chapter 42 of the United States Code;
- an employee whose work is compensated by a qualified scholarship program as that term is defined in the Internal Revenue Code, Section 117 of Chapter 20 of the United States Code; or
- a participant in a Work Experience Program (WEP) under section 336-c of the New York State Social Services Law.

Retaliation Prohibited

An employer may not threaten or engage in retaliation against an employee for exercising or attempting in good faith to exercise any right provided by the PSLL. In addition, an employer may not interfere with any investigation, proceeding, or hearing pursuant to the PSLL.

Notice of Rights

An employer must provide its employees with written notice of their rights pursuant to the PSLL. Such notice must be in English and the primary language spoken by an employee, provided that DCA has made available a translation into such language. Downloadable notices are available on DCA's website at <http://www.nyc.gov/html/dca/html/law/PaidSickLeave.shtml>.

Any person or entity that willfully violates these notice requirements is subject to a civil penalty in an amount not to exceed fifty dollars for each employee who was not given appropriate notice.

Records

An employer must retain records documenting its compliance with the PSSL for a period of at least three years, and must allow DCA to access such records in furtherance of an investigation related to an alleged violation of the PSSL.

Enforcement and Penalties

Upon receiving a complaint alleging a violation of the PSSL, DCA has the right to investigate such complaint and attempt to resolve it through mediation. Within 30 days of written notification of a complaint by DCA, or sooner in certain circumstances, the employer must provide DCA with a written response and such other information as DCA may request. If DCA believes that a violation of the PSSL has occurred, it has the right to issue a notice of violation to the employer.

DCA has the power to grant an employee or former employee all appropriate relief as set forth in New York City Administrative Code 20-924(d). Such relief may include, among other remedies, treble damages for the wages that should have been paid, damages for unlawful retaliation, and damages and reinstatement for unlawful discharge. In addition, DCA may impose on an employer found to have violated the PSSL civil penalties not to exceed \$500 for a first violation, \$750 for a second violation within two years of the first violation, and \$1,000 for each succeeding violation within two years of the previous violation.

More Generous Policies and Other Legal Requirements

Nothing in the PSSL is intended to discourage, prohibit, diminish, or impair the adoption or retention of a more generous sick time policy, or the obligation of an employer to comply with any contract, collective bargaining agreement, employment benefit plan or other agreement providing more generous sick time. The PSSL provides minimum requirements pertaining to sick time and does not preempt, limit or otherwise affect the applicability of any other law, regulation, rule, requirement, policy or standard that provides for greater accrual or use by employees of sick leave or time, whether paid or unpaid, or that extends other protections to employees. The PSSL may not be construed as creating or imposing any requirement in conflict with any federal or state law, rule or regulation.

DDC PROJECT #: PV181HSA2

PROJECT NAME: Harlem School of the Arts, Phase II Building Renovations.

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

No.	Bidders Questions	DDC Responses
1	Please provide the name and contact information for the existing building BMS Controls vendor.	The existing building BMS Controls vendor is listed below: Trane New York Contact: Adam Rodriguez Area Service Manager Ingersoll Rand Climate Control Technologies 45-18 Court Square, Suite 100 Long Island City, New York 11101 Office 718.269.3623 Mobile 917.681.9668

THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

November 17, 2015

ADDENDUM No. # 3

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

PV181HSA2

Harlem School of the Arts, Phase II Building Renovations

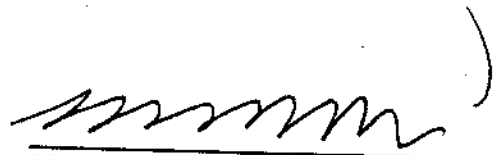
This addendum is issued for the purpose of amending the requirements of the Bid and Contract Documents and is hereby made a part of said Bid and Contract Documents to the same extent as though it were originally included therein.

The bidder is advised that the items listed below apply to the project:

1. **Questions from Bidders and Responses to Questions:**
See Attachment A.

THIS ADDENDUM MUST BE SIGNED BY ALL BIDDERS AND ATTACHED TO THEIR BIDS.

If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-3170, (718) 391-1016, or by fax at (718) 391-2615.



Michael Nastasi
Assistant Commissioner
Cultural/ Parks Programs

Name of Bidder

By: _____

DDC PROJECT #: PV181HSA2

PROJECT NAME: Harlem School of the Arts, Phase II Building Renovations.

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

No.	Bidders Questions	DDC Responses
1	Sprinkler specification sections 210301 & 211313 are provided but no Sprinkler drawings? Please clarify.	Sprinkler pipes are shown on drawings P-002.00 and P-003A.00. In accordance with DOB requirements, sprinkler system for less than 30 Sprinkler heads can be connected to the domestic water supply and filed as Plumbing. However the system shall comply with requirements specified in specification sections 210301 and 211313.



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

ADDENDUM TO THE GENERAL CONDITIONS
FOR SINGLE CONTRACT PROJECTS

The General Conditions are hereby amended in accordance
with the terms and conditions set forth in this Addendum.

I. PROJECT DESCRIPTION

FMS #: PV181HSA2

PROJECT NAME: HARLEM SCHOOL OF THE ARTS, PHASE II BUILDING RENOVATIONS

PROJECT DESCRIPTION: This Project consists of upgrade of the existing facility which will include the rehabilitation of the main entrance to achieve barrier free accessibility, creation of a barrier free restroom on the second floor, installation of a new elevator to serve the first, second, and third floors, replacing the boiler and hot water systems, new central air-conditioning units, modification of existing air- distribution system, and provide additional electrical outlets in the "G Space" to be used for portable sound and lighting devices.

PROJECT LOCATION: 645 St Nicholas Avenue
BOROUGH: Manhattan
CITY OF NEW YORK
ZIP CODE: 10031
COMMUNITY BOARD #: 109

LANDMARK STATUS:

DESIGNATED LANDMARK STRUCTURE OR SITE: NO

LANDMARK QUALITY STRUCTURE: NO

II. LEED GREEN BUILDING REQUIREMENTS

Not Used.

III. COMMISSIONING REQUIREMENTS

Not Used

IV. PROJECT MANAGEMENT

- DDC shall publicly bid and enter into all contracts for the Project. DDC shall manage the Project using its own personnel.
- DDC shall publicly bid and enter into all contracts for the Project. A Construction Management firm (the "CM") hired by DDC shall manage the Project. The Contractor is advised that the CM shall serve as the representative of the Commissioner at the site and shall, subject to review by the Commissioner, be responsible for the inspection, management, coordination and administration of the required construction work, as delineated in the article of the Standard Construction Contract entitled "The Resident Engineer".

V. CONTRACTS FOR THE PROJECT

The Project consists of a single contract, the Contract for General Construction Work. The Contractor for General Construction Work is responsible for the performance of all required work for the Project as set forth in the Contract Documents (General Conditions, Drawings and Specifications), including all responsibilities and obligations assigned to separate Contractors for the following subdivisions of the work: Plumbing Work, HVAC Work, and Electrical Work. All responsibilities and obligations in the Contract Documents assigned to separate Contractors for such subdivisions of the work are the responsibility of the Contractor for General Construction Work.

The separate Contracts pertaining to this Project are set forth below:

Contract No. 1 - Contract for General Construction Work

VI. SCHEDULES

The Contractor is advised that Schedules A through F are attached to, and incorporated as part of, this Addendum to the General Conditions. These schedules contain important information that is specific to this Project. The Contractor is advised to carefully review these schedules.

VII. APPLICABILITY OF SECTIONS/SUB-SECTIONS AND AMENDED SUB-SECTIONS

The Contractor is advised that various Sections/Sub-Sections in the General Conditions may not apply to this Project or may apply as amended. Such Sections/Sub-Sections advise the Contractor to "Refer to the Addendum for the applicability of this Section/Sub-Section." Such Sections/Sub-Sections are set forth below. A check mark indicates whether the Section/Sub-Section (1) applies to the Project, (2) does not apply to the Project, or (3) applies to the Project as amended. If no box is checked, the Section/Sub-Section, as set forth in the General Conditions, applies to the Project. Amended Sections/Sub-Sections, if any, are set forth following this list of Sections.

<u>Section</u>	<u>Sub-Section</u>	<u>Sub-Section</u>	<u>Applies</u>	<u>Does not Apply</u>	<u>Applies as Amended</u>
1 1000	1.4 (B)	Scope and Intent / LEED		x	
	1.4(C)	Scope and Intent / Commissioning		x	
01 3233		Photographic Documentation		x	
01 3300	1.7 (A-D)	LEED Submittals		x	
01 3503		General Mechanical Requirements	x		
01 3506	3.2 (A-B)	Electrical Conduit System Including Boxes (Pull, Junction and Outlet)	x		
	3.3 (A-E)	Electrical Wiring Devices	x		
	3.4 (A-I)	Electrical Conductors and Terminations	x		
	3.5 (A-B)	Circuit Protective Devices	x		
	3.6 (A-J)	Distribution Centers	x		
	3.7 (A-I)	Motors	x		
	3.8 (A-I)	Motor Control Equipment	x		
01 3591		Historic Treatment Procedures		x	
01 5000	3.2 (A)	Temporary Water Facilities / Temporary Water		x	
	3.2 (B)	Temporary Water Facilities / Temporary Water – Work in Existing Facilities	x		
	3.3 (B)	Temporary Sanitary Facilities / Self-Contained Toilet Units		x	
	3.3 (C)	Temporary Sanitary Facilities / Existing Toilets	x		
	3.4 (B) 1	Temporary Power, Lighting, and Site Lighting / Connection to Utility Lines		x	

<u>Section</u>	<u>Sub-Section</u>	<u>Sub-Section</u>	<u>Applies</u>	<u>Does not Apply</u>	<u>Applies as Amended</u>
01 5000	3.4 (B) 2	Temporary Power, Lighting, and Site Lighting / Connection to Existing Electrical Power Service	x		
	3.4 (B) 3	Temporary Power, Lighting, and Site Lighting / Electrical Generator Power Service		x	
	3.4 (D)	Temporary Power, Lighting, and Site Lighting / Temporary Lighting		x	
	3.4 (E)	Temporary Power, Lighting, and Site Lighting / Site Security Lighting (for New Construction Only)		x	
	3.5 (A-J)	Temporary Heat	x		
	3.8 (A)	DDC Field Office / Office Space in Existing Building		x	
	3.8 (B)	DDC Field Office / DDC Field Office Trailer	x		
	3.8 (B-3a)	DDC Field Office / DDC Managed Field Office Trailer		x	
	3.8 (B-3b)	DDC Field Office / CM Managed Field Office Trailer		x	
	3.8 (D)	DDC Field Office / Additional Equipment for the DDC Field Office	x		
	3.13(A-D)	Work Fence Enclosure		x	
	3.17(B)	Project Rendering		x	
	3.18 (A-C)	Security Guards / Fire Guards on Site		x	
01 5411	3.1 (A-J)	Temporary Use, Operation and Maintenance of Elevators During Construction for New Buildings Up To and Including 15 Stories		x	
	3.2 (A-M)	Temporary Use, Operation and Maintenance of Elevators During Construction for New Buildings Over 15 Stories		x	
	3.3 (A-E)	Temporary Use, Operation and Maintenance of Elevators During Construction for Existing Buildings		x	
01 7300	3.3 (A-I)	Surveys			x
	3.4 (A-B)	Borings		x	
	3.12 (A-D)	Sleeves and Hangers	x		
	3.13 (A)	Sleeve and Penetration Drawings	x		
	3.15 (A)	Location of Partitions	x		
01 7419	1.5 (C)	Waste Management Performance Requirements / LEED Certification		x	
01 7900		Demonstration and Owner's Pre-Acceptance Orientation	x		
01 8113		Sustainable Design Requirements for LEED Buildings		x	
01 8113.13		VOC Limits for Adhesives, Sealants, Paints and Coatings for LEED Buildings		x	
01 8119		Indoor Air Quality Requirements for LEED Buildings		x	
01 9113		General Commissioning Requirements	x		

AMENDED SECTIONS/SUB-SECTIONS

The Contractor is advised that the amended Sub-Sections set forth below are included in the General Conditions and apply to the Project.

1. Section 017300 Execution, Articles 3.3 A thru D are not applicable for this project. Applicable Articles are 3.3 E thru I.

ADDITIONAL SECTION/SUB-SECTIONS

PROJECT WORKING HOURS

- A. The Contractor shall establish the work hours for the project within the parameters set forth by the City of New York Department of Buildings, the Department of Environmental Protection, and other agencies having such jurisdiction. Provide the Commissioner with a schedule of the intended hours in order for it to set its personnel schedule.
- B. No overtime work shall be performed without prior written approval by the Commissioner.
- C. When performing work during "After hours" periods as determined by the NYC Building Department, obtain and pay for all required permits.
- D. The Harlem School of The Arts (HSA) will remain open during construction. Construction activities shall be performed between 7:00 AM and 3:00 PM, Monday to Friday. All areas must be swept and cleaned by 3:00pm. All contractors and workers must exit HSA property by 3:15pm.

CONTRACTOR GUIDELINES

- A. Construction Progress Meetings shall be as per General Conditions Section 013100 Project Management and Coordination.
- B. Appointed construction supervisor must be onsite at all times while construction workers are in the building.
- C. Construction materials may not be left in front of the main entrance or in courtyard. The building's main entrance may not be used for deliveries.
- D. Debris may not be left in front of the building. All dumpsters related to construction must be arranged and supervised by construction supervisor.
- E. Dust Control as per General Conditions Section 011000 Summary.
- F. All contractors and workers must sign in and out daily.
- G. Egress from the building must be clearly defined and adhere to current NYC Fire Department and Department of Building codes during construction.

PHASING

A. Order of Work:

1. To complete all the work of all Trades within the required Contract Duration, and to accommodate Project needs, the Work of this Contract shall be performed in "Phases" coordinated with HSA and DDC. Prior to commencement of work, General Contractor shall develop a Phasing Plan outlining all major phases of the projects that will be performed consequently or concurrently, and submit to DDC/HSA for approval.
2. *Order of Work and Phasing Plan shall address the following Priorities:*
 - a. *Boiler Room Renovation (Boiler, Water Heater, Pumps, Piping).*
 - b. *Replacement of HVAC Rooftop Units and Modification to existing ductwork, including replacement of several VAV boxes.*
 - c. *Installation of New Elevator.*
 - d. *Renovation and installation of ADA-compliant bathroom on the second floor.*
 - e. *Modification of Access Ramp and Entrance Doors.*
3. *Phasing Plan should consider seasonal constraints and Occupancy Level.*

General Contractor and sub-contractors should consider the following Notes and Recommendations:

- a. *Existing hot water distribution systems (boiler, pumps, hot water heater) are not functional. Boiler Room renovation can be performed during any season.*
- b. *Rooftop Units HVAC-2, HVAC-3, HVAC-4, and HVAC-5 provide cooling and heating for main HSA spaces and studios. Replacement of these units shall be well coordinated and performed during the spring or fall. Replacement of these units shall be completed by the beginning of heating season.*
- c. *Installation of the new elevator includes cutting of slabs, underpinning, roof opening and construction of elevator shaft. Slab opening on second floor will require installation of support steel and temporary dust mitigation partitions to allow use of the remaining portion of the Recital Room during the evening hours. Roof opening shall be temporarily protected and waterproofed. Preferable period for installation of elevator shaft is from May to the end of September.*
- d. *ADA-compliant toilet could be constructed during any seasons (subject to approval and coordination with HSA-planned high occupancy events).*
- e. *Renovation to access ramp and entrances will require the use of alternate means of egress. It should be scheduled and coordinated with HSA.*

Contractor Phasing Plan shall address the following:

- Public safety.
- Accessibility to the means of egress.
- Safe access by occupants to the working place or visiting destination.
- As minimal as possible, interruption of the daily activities of HSA staff without compromising their safety.
- Minimum interruption of utility services.

VIII. SPECIAL EXPERIENCE REQUIREMENTS FOR THE PROJECT

Not Used

IX. REVISIONS: SPECIFICATIONS AND CONTRACT DRAWINGS

The Specifications and the Contract Drawings for the Project are revised in accordance with the provisions set forth below.

- (1) Owner: Wherever the term "Owner" is used in the Specifications and/or the Contract Drawings, such term shall mean the City of New York.
- (2) Other Entities: In the event any entity other than the City of New York is referred to or named as the "Owner" in the Specifications and/or the Contract Drawings, the name of such other entity is deemed deleted and replaced with the "City of New York".
- (3) Architect / Engineer: Wherever the words "Architect", "Engineer", "Architect / Engineer" or "Architect and/or Engineer" are used in the Specifications and/or the Contract Drawings, such words are deemed deleted and replaced with the word "Commissioner".
- (4) Products / Manufacturers: Wherever the Specifications and/or the Contract Drawings require the contractor to provide a particular product (i.e., material and/or equipment) from a designated manufacturer and/or vendor, the term "or approved equal" is deemed inserted, even if only one product and/or manufacturer is specified, except as otherwise provided below.
 - (a) Proprietary Items: If the Bid Booklet contains a Notice which identifies a particular product from a designated manufacturer as a "Proprietary Item", the Contractor shall be required to provide such specified product. In such case, no substitution or "approved equal" will be permitted.
- (5) Special Experience Requirements: Special Experience Requirements for the Project, if any, are set forth in the Bid Booklet. Special Experience Requirements may apply to contractors, subcontractors, installers, manufacturers and/or suppliers. If the Specifications and/or the Contract Drawings contain any Special Experience Requirement that is not set forth in the Bid Booklet, such Special Experience Requirement is deemed deleted, except as otherwise provided below.
 - (a) Any Special Experience Requirement that provides that the entity performing the work or supplying the material must have more than three (3) years of experience, is revised to provide that the entity performing the work or supplying the material must have three (3) years of experience, except as described in paragraph (b) below.
 - (b) Any Special Experience Requirement that pertains to the abatement of hazardous materials shall not be subject to the deletion and/or revision set forth above. Such Special Experience Requirement shall remain in full force and effect.
 - (c) Any Special Experience Requirement that provides that the entity performing the work must be licensed, authorized, certified, approved by or acceptable to the manufacturer, is deemed deleted and replaced with the requirement that such entity must be properly trained for the specified work.
 - (d) Any Special Experience Requirement that provides that the individual workers performing the work must be licensed, authorized, certified, approved by or acceptable to the manufacturer, is deemed deleted and replaced with the requirement that such individual workers must be properly trained for the specified work.
- (6) Alternate Bids: If the agency is requesting the submission of Alternate Bids, a Notice regarding such Alternate Bids is set forth in the Bid Booklet. In the event of any conflict or inconsistency between (1) the Notice regarding Alternate Bids set forth in the Bid Booklet and (2) a provision in the Specifications and/or the Contract Drawings regarding Alternate Bids, the Notice set forth in the Bid Booklet shall prevail. If the agency is not requesting the submission of Alternate Bids, as indicated by the absence of a Notice in the Bid Booklet, and the Specifications and/or the Contract Drawings contain any provision regarding Alternate Bids, such provision is deemed deleted.
- (7) Contractor Retained Engineer: If the Specifications and/or the Contract Drawings require the Contractor to retain an Engineer to provide engineering services for the Project, the following sentence is deemed inserted: "Such Engineer must be a Professional Engineer, licensed in the State of New York."

- (8) LEED Related Provisions: If the Specifications and/or the Contract Drawings require the Contractor to purchase FSC certified wood, rapidly renewable materials, or materials within 500 miles, such provisions are deemed deleted and replaced with the requirement that if the contractor has purchased FSC certified wood, rapidly renewable materials, or materials within 500 miles, the contractor shall submit such forms or documentation as may be required by the City in order for the USGBC to certify that the Project qualifies for the related LEED credit(s).
- (9) Guarantees: Requirements for Guarantees and Maintenance are set forth in Schedule B, which is included in the Addendum to the General Conditions. In the event of any conflict or inconsistency between (1) a guarantee and/or maintenance requirement set forth in the Specifications and/or the Contract Drawings and (2) a guarantee and/or maintenance requirement set forth in Schedule B, the guarantee and/or maintenance requirement set forth in Schedule B shall prevail.
- (10) Warranties: Requirements for Warranties are set forth in Schedule B, which is included in the Addendum to the General Conditions.
- (a) In the event of any conflict or inconsistency between (1) a warranty requirement set forth in the Specifications and/or the Contract Drawings and (2) a warranty requirement set forth in Schedule B, the warranty requirement set forth in Schedule B shall prevail.
- (b) In the event a warranty requirement set forth in the Specifications and/or the Contract Drawings is omitted from Schedule B, such omission from Schedule B shall have no effect and the Contractor's obligation to provide the manufacturer's warranty, as set forth in the Specifications and/or the Contract Drawings, shall remain in full force and effect.
- (c) In the event a warranty requirement for a particular item of material or equipment is omitted from Schedule B, as well as from the Specifications or the Contract Drawings, and the manufacturer of such item actually provides a warranty, the Contractor shall be obligated to obtain and deliver to the Commissioner the highest level of warranty actually provided by that manufacturer.
- (11) Exculpatory Provisions: In the event the Specifications and/or the Contract Drawings contain any provision whereby the consultant and/or any of its officers, employees or agents, including subconsultants, is absolved of responsibility for any act or omission, such provision is deemed deleted.
- (12) Insurance: Provisions regarding insurance coverage the Contractor is required to provide are set forth in Article 22 of the City of New York Standard Construction Contract and Schedule A, which is included in the Addendum to the General Conditions. In the event the Specifications and/or the Contract Drawings contain any provision regarding insurance requirements, such provision is deemed deleted.
- (13) Indemnification: Provisions regarding indemnification are set forth in Articles 7, 12, 22 and 57 of the City of New York Standard Construction Contract. In the event the Specifications and/or the Contract Drawings contain any provision regarding indemnification, such provision is deemed deleted.
- (14) Dispute Resolution: Provisions regarding dispute resolution are set forth in Article 27 of the City of New York Standard Construction Contract. In the event the Specifications and/or the Contract Drawings contain any provision regarding dispute resolution, such provision is deemed deleted.
- (15) Payment to Other Entities: In the event the Specifications and/or the Contract Drawings contain any provision which requires the Contractor to make payments to an entity other than a subcontractor and/or supplier providing services and/or material for the project, such provision is deemed deleted.
- (16) General Conditions: In the event of any conflict or inconsistency between (1) the Specifications and/or the Contract Drawings and (2) the General Conditions, the General Conditions shall prevail.
- (17) Standard Construction Contract: In the event of any conflict or inconsistency between (1) the Specifications and/or the Contract Drawings and (2) the City of New York Standard Construction Contract, the City of New York Standard Construction Contract shall prevail.

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Contract Requirements

Various Articles of the Contract refer to requirements which are set forth in Schedule A of the General Conditions. The Schedule set forth below specifies the following: (1) the referenced Articles of the Contract, and (2) the specific requirements applicable to each separate contract.

REFERENCE	ITEM	REQUIREMENTS	CONTRACT #1
Information For Bidders	Bid Security		See Attachment 1 – Bid Information in the Bid Booklet
Information For Bidders	Performance and Payment Bonds		See Attachment 1- Bid Information in the Bid Booklet
Article 14 Contract	Time of Completion	Consecutive Calendar Days	480 ccds
Article 15 Contract	Liquidated Damages	For each consecutive calendar day over completion time	400
Article 17 Contract	Sub-Contracts	Not to exceed Percent of Contract Price	60%
Article 21 Contract	Retainage	Percent of Voucher	If 100% bonds are required 5% If 100% bonds are not required, and Contract Price is less than \$1,000,000 10% If 100% bonds are not required, and Contract Price is more than \$1,000,000 10%
Article 24 Contract	Deposit Guarantee	Percent of Contract Price	1%
Article 24 Contract	Period of Guarantee		See Schedule B of the Addendum to the General Conditions
Article 74 Contract	Statement of Work		See Contract Article 74
Article 75 Contract	Compensation to be Paid to Contractor		See Contract Article 75
Article 78 Contract	MWBE Program		See M/WBE Utilization Plan in the Bid Booklet

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions

Note: All certificate(s) of insurance submitted pursuant to Contract Article 22.3. 3 must be accompanied by a Certification by Broker consistent with Part III below and include the following information:

- For each insurance policy, the name and NAIC number of issuing company, number of policy, and effective dates;
- Policy limits consistent with the requirements listed below;
- Additional insureds or loss payees consistent with the requirements listed below; and
- The number assigned to the Contract by the City (in the "Description of Operations" field).

Insurance indicated by a blackened box (■) or by (X) in the to left will be required under this contract.

Types of Insurance (per Article 22 in its entirety, including listed paragraph)	Minimum Limits and Special Conditions
<ul style="list-style-type: none"> ■ Commercial General Liability Art. 22.1.1 	<p>The minimum limits shall be \$1,000,000.00 per occurrence and \$2,000,000.00 per project aggregate applicable to this Contract.</p> <p>Additional Insureds:</p> <ol style="list-style-type: none"> 1. City of New York, including its officials and employees, with coverage at least as broad as ISO Forms CG 20 10 and CG 20 37, and 2. All person(s) or organization(s), if any, that Article 22.1.1(b) of the Contract requires to be named as Additional Insured(s), with coverage at least as broad as ISO Form CG 20 26. The Additional Insured endorsement shall either specify the entity's name, if known, or the entity's title (e.g., Project Manager). 3. The Harlem School of Arts, Inc.
<ul style="list-style-type: none"> ■ Workers' Compensation Art. 22.1.2 ■ Disability Benefits Insurance Art. 22.1.2 ■ Employers' Liability Art. 22.1.2 <input type="checkbox"/> Jones Act Art. 22.1.3 <input type="checkbox"/> U.S. Longshoremen's and Harbor Workers Compensation Act Art. 22.1.3 	<p>Workers' Compensation, Employers' Liability, and Disability Benefits Insurance: Statutory per New York State law without regard to jurisdiction.</p> <p>Note: The following forms are acceptable: (1) New York State Workers' Compensation Board Form No. C-105.2, (2) State Insurance Fund Form No. U-26.3, (3) New York State Workers' Compensation Board Form No. DB-120.1 and (3) Request for WC/DB Exemption Form No. CE-200. The City will not accept an ACORD form as proof of Workers' Compensation or Disability Insurance.</p> <p>Jones Act and U.S. Longshoremen's and Harbor Workers' Compensation Act: Statutory per U.S. law.</p>

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions

Insurance indicated by a blackened box (■) or by (X) in the to left will be required under this contract.

Types of Insurance (per Article 22 in its entirety, including listed paragraph)	Minimum Limits and Special Conditions
■ Builders' Risk Art. 22.1.4	100 % of total value of Work Contractor the Named Insured; the City both an Additional Insured and one of the loss payees as its interests may appear. If the Work does not involve construction of a new building or gut renovation work, the Contractor may provide an installation floater in lieu of Builders Risk insurance. Note: Builders Risk Insurance may terminate upon Substantial Completion of the Work in its entirety.
■ Commercial Auto Liability Art. 22.1.5	\$1,000,000.00 per accident combined single limit If vehicles are used for transporting hazardous materials, the Contractor shall provide pollution liability broadened coverage for covered vehicles (endorsement CA 99 48) as well as proof of MCS 90
<input type="checkbox"/> Contractor's Pollution Liability Art. 22.1.6	\$ _____ per occurrence \$ _____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
<input type="checkbox"/> Marine Protection and Indemnity Art. 22.1.7(a)	\$ _____ per occurrence \$ _____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions (Continued)

Insurance indicated by a blackened box (■) or by (X) in the to left will be required under this contract.

Types of Insurance (per Article 22 in its entirety, including listed paragraph)	Minimum Limits and Special Conditions
<input type="checkbox"/> Hull and Machinery Insurance Art. 22.1.7(b)	\$ _____ per occurrence \$ _____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
<input type="checkbox"/> Marine Pollution Liability Art. 22.1.7(c)	\$ _____ each occurrence Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
[OTHER] Art. 22.1.8 <input type="checkbox"/> Ship Repairers Legal Liability	\$ _____ each occurrence [Contracting agency to fill in total value of City vessels involved]
[OTHER] Art. 22.1.8 <input type="checkbox"/> Collision Liability/Towers Liability	\$ _____ per occurrence \$ _____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
[OTHER] Art. 22.1.8 <input type="checkbox"/> Railroad Protective Liability	\$ _____ per occurrence \$ _____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions (Continued)

Insurance indicated by a blackened box (■) or by (X) in the to left will be required under this contract.

<p>[OTHER] Art. 22.1.8</p> <p><input type="checkbox"/> Asbestos Liability _____</p>	<p>Only required of the Contractor or Subcontractor performing any required asbestos removal.</p> <p>\$1,000,000 each occurrence, \$2,000,000 aggregate (Combined Single Limit); only required of the Contractor or Subcontractor performing any required asbestos removal.</p> <p>Additional Insureds: 1. City of New York, including its officials and employees, and</p> <p>2. _____</p> <p>3. _____</p>
<p>[OTHER] Art. 22.1.8</p> <p>■ Boiler Insurance _____</p>	<p>\$200,000</p>
<p>[OTHER] Art. 22.1.8</p> <p>■ Professional Liability</p> <p>In the event any section of the Specifications requires the Contractor to engage a Professional Engineer to provide design and/or engineering services, the Engineer engaged by the Contractor, as well as any sub consultant(s) performing professional services, shall provide Professional Liability Insurance.</p>	<p>\$1,000,000 per occurrence</p> <p>The Contractor's Professional Engineer shall maintain and submit evidence of Professional Liability Insurance in the minimum amount of \$1,000,000 per claim. The policy or policies shall include an endorsement to cover the liability assumed by the Contractor under this Agreement arising out of the negligent performance of professional services or caused by an error, omission or negligent act of the Contractor's Professional Engineer or anyone employed by the Contractor's Professional Engineer.</p> <p>Claims-made policies will be accepted for Professional Liability Insurance. All such policies shall have an extended reporting period option or automatic coverage of not less than two (2) years. If available as an option, the Contractor's Professional Engineer shall purchase extended reporting period coverage effective on cancellation or termination of such insurance unless a new policy is secured with a retroactive date, including at least the last policy year.</p>

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART III. Broker's Certification

[Pursuant to Article 22.3.3 of the **Contract**, every Certificate of Insurance must be accompanied by either the following certification by the broker setting forth the following text and required information and signatures or certified copies of all policies referenced in the Certificate of Insurance.]

CERTIFICATION BY BROKER

The undersigned insurance broker represents to the City of New York that the attached Certificate of Insurance is accurate in all material respects, and that the described insurance is effective as of the date of this Certification.

[Name of broker (typewritten)]

[Address of broker (typewritten)]

[Email address of broker (typewritten)]

[Phone number/Fax number of broker (typewritten)]

[Signature of authorized official or broker]

[Name and title of authorized official (typewritten)]

State of)
) ss:
County of)

Sworn to before me this
_____ day of _____, 20__

NOTARY PUBLIC FOR THE STATE OF _____

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART IV. Address of Commissioner

Wherever reference is made in Article 7 or Article 22 to documents to be sent to the **Commissioner** (e.g., notices, filings, or submissions), such documents shall be sent to the address set forth below or, in the absence of such address, to the **Commissioner's** address as provided elsewhere in this **Contract**.

ACCO's Office, Insurance Unit

30-30 Thomson Avenue, 4th Floor

Long Island City, New York 11101

SCHEDULE B

Guarantees and Warranties

(Reference: Section 01 7839, Article 2.7 of the DDC Standard General Conditions)

GUARANTY FROM CONTRACTOR

(1) **Contractor's Guaranty Obligation:** The Contractor shall promptly repair, replace, restore or rebuild, as the Commissioner may determine, any finished Work in which defects of materials or workmanship may appear or to which damage may occur because of such defects, during the one (1) year period subsequent to the date of Substantial Completion (or use and occupancy in accordance with the Contract), except for the areas of Work set forth below:

- Roofing, Waterproofing, and Joint Sealant Work. For these types of work, the guarantee period shall be (2) two years.
- Trees and/or Plant Material. For trees and/or plant material furnished and installed, the guarantee period shall be (2) two years. During the guarantee period, the Contractor shall provide all maintenance services set forth in the Specifications.

(2) **Guaranty Period:** The obligation of the Contractor, and its Surety under the Performance Bond, is limited to the period(s) of time specified above.

(3) **Other Provisions Deemed Deleted:** In the event the Specifications and/or the Contract Drawings contain any provisions regarding guaranty requirements, such provisions are deemed deleted and replaced with the guaranty requirements set forth in this Schedule B.

WARRANTY FROM MANUFACTURER

(1) **Contractor's Obligation to Provide Warranties:** The items of material and/or equipment for which manufacturer warranties are required are listed below. For each item of material and/or equipment listed below, the Contractor shall obtain a written warranty from the manufacturer. Such warranty shall provide that the material or equipment is free from defects for the period set forth below and will be replaced or repaired within such specified period. The Contractor shall deliver all required warranties to the Commissioner.

(2) **Required Warranties:**

Specification Number	Material or Equipment	Warranty Period
07 51 00	Built-Up Roofing	20 years
07 92 00	Silicone Sealants	20 years
07 92 00	Polyurethane or Silicone	5 years
08 11 02	Steel Doors and Frames	1 year
08 11 16	Aluminum Doors and Frames	1 year
08 71 00	Finish Hardware	1 year
22 14 29	Sump Pump, Submersible	5 years
22 33 01	Domestic Water Heater (Glass Lined Tank)	3 years

22 44 53	Pumps	5 years
23 05 01	General Equipment, Workmanship, Material	1 year
23 09 23	Temperature Control System	1 year (48 hours repair period)
23 21 23	Hydronic Pumps	5 years
23 33 13	Dampers (Actuator)	5 years
23 34 00	Centrifugal Fans	2 years
23 52 23	Cast Iron Boiler	10 years
23 52 24	Fuel Burning Equipment Burner	1 years 2 year
23 63 13	Air Cooled Condensing Unit	2 years (5 years compressor)
23 73 13	Air Handling Units	2 years
23 81 06	Packaged Rooftop Unit Refrigeration Compressors	2 years 5 years
26 05 01	General provisions for Electrical Work	5 Years
26 24 19	Motors, Starters and Control Equipment	5 years
31 23 43	EPS Geofoam	10 years

(3) Application: The obligations under the warranty for the periods specified above shall apply only to the manufacturer of the material or equipment, and not to the Contractor or its Surety; provided, however, the Contractor retains responsibility for obtaining all required warranties from the manufacturers and delivering the same to the Commissioner.

(4) Other Provisions: The warranty requirements set forth in this Schedule B are also included in the Specifications.

- (a) In the event of any conflict between a warranty requirement set forth in the Specifications and a warranty requirement set forth in Schedule B, the warranty requirement set forth in Schedule B shall take precedence.
- (b) In the event a warranty requirement set forth in the Specifications is omitted from Schedule B, such omission from Schedule B shall have no effect and the Contractor's obligation to provide the manufacturer's warranty, as set forth in the Specifications, shall remain in full force and effect
- (c) In the event a warranty requirement for a particular item of material or equipment is omitted from both Schedule B and the Specifications, and the manufacturer of such item actually provides a warranty, the Contractor shall be obligated to obtain and deliver to the Commissioner the highest level of warranty actually provided by that manufacturer.
- (d) In the event a warranty requirement is provided for a particular item of material or equipment, and such requirement specifies a warranty period that is longer than that which is actually provided by any of the specified manufacturers, the Contractor shall be obligated to obtain and deliver to the Commissioner the highest level of warranty actually provided by any of the specified manufacturers,

unless otherwise directed in writing by the Commissioner.

- (e) Unless indicated otherwise Warranties are to take effect on the date of Substantial Completion.

SCHEDULE C

Contract Drawings

(Reference: Section 01 1000, Article 1.5 (A) of the DDC Standard General Conditions)

The Schedule set forth below lists all Contract Drawings for the Project.

	1. <u>HARLEM SCHOOL OF ARTS:</u>
T-001.00	TITLE SHEET
	<u>ARCHITECTURAL DRAWINGS</u>
DM-001.00	FIRST FLOOR PLAN DEMOLITION
DM-002.00	SECOND FLOOR PLAN DEMOLITION
DM-003.00	DEMOLITION. ROOF OVER 2 ND FL.
A-001.00	FIRST FLOOR PLAN
A-002.00	SECOND FLOOR PLAN
A-003.00	ROOF OVER 2 ND FL. AND 3 RD FL. PLAN
A-004.00	EAST ELEVATION, SECTION, AND HAND RAILS VIEW
A-005.00	ENLARGED PLANS
A-006.00	SECTIONS AND DETAILS
A-007.00	SECTIONS AND DETAILS
A-008.00	SECTIONS AND DETAILS
A-009.00	PARTITION DETAILS
A-010.00	DOOR AND WINDOW SCHEDULES
A-011.00	ELEVATOR CAB - INTERIOR FINISH
A-012.00	Not Used
A-013.00	TOILET PLANS AND ELEVATIONS
A-101.00	NEW ELEVATOR PLAN AND SECTION
	<u>STRUCTURAL DRAWINGS</u>
S-001.00	GENERAL AND STRUCTURAL NOTES
DM-004.00	FIRST FLOOR PLAN DEMOLITION
DM-005.00	SECOND FLOOR PLAN DEMOLITION
DM-006.00	DEMOLITION ROOF OVER 2 ND FL.
S-002.00	FIRST FLOOR PLAN
S-003.00	SECOND FLOOR PLAN
S-004.00	ROOF OVER 2 ND FL. AND 3 RD FL. PLAN
S-005.00	SECTIONS AND DETAILS
S-006.00	SECTIONS AND DETAILS
S-007.00	ACOUSTICAL BARRIERS. PLANS AND ELEVATIONS.
S-008.00	ACOUSTICAL BARRIERS. SECTION AND DETAILS
S-009.00	ACOUSTICAL BARRIERS. ROOF PENETRATIONS AND CURB SUPPORTS
	<u>MECHANICAL DRAWINGS</u>
EN-001.00	ECCC-NYS COMPLIANCE -COMCHECK
EN-002	ECCC-NYS COMPLIANCE -COMCHECK

M-001.00	MECHANICAL NOTES, SYMBOLS LIST AND ABBREVIATIONS
DM-007.00	HVAC - DEMOLITION BASEMENT AND BOILER ROOM PLANS
DM-008.00	HVAC - DEMOLITION FIRST FLOOR PLAN
DM-009.00	HVAC - DEMOLITION SECOND FLOOR PLAN
M-010.00	HVAC - DEMOLITION ROOF / 3RD FLOOR PLAN
M-002.00	HVAC - CELLAR, BOILER ROOM AND UPPER ROOF PLANS
M-003.00	HVAC - FIRST FLOOR PLAN
M-004.00	HVAC - SECOND FLOOR PLAN
M-005.00	HVAC - THIRD FLOOR PLAN
M-006.00	HVAC - DETAILS
M-007.00	HVAC - DETAILS
M-008.00	HVAC - CONTROL SCHEMATICS
M-009.00	HVAC - EQUIPMENT SCHEDULES

PLUMBING DRAWINGS

P-001.00	PLUMBING NOTES, SYMBOLS LIST AND ABBREVIATIONS
DM-011.00	PLUMBING DEMOLITION FIRST FLOOR PLAN
DM-012.00	PLUMBING DEMOLITION SECOND FLOOR PLAN
DM-013.00	PLUMBING DEMOLITION THIRD FLOOR PLAN
P-002.00	PLUMBING FIRST FLOOR PLAN
P-003.00	PLUMBING SECOND FLOOR PLAN
P-003.A.00	A.D.A. TOILET ROOM ENLARGED PLANS AND RISERS.
P-004.00	PLUMBING THIRD FLOOR AND ROOF PLAN

ELECTRICAL DRAWINGS

E-001.00	ELECTRICAL NOTES, SYMBOLS LIST AND ABBREVIATIONS
M-014.00	ELECTRICAL 1ST, 2ND AND 3RD FLOOR PLANS - DEMOLITION
DM-015.00	ELECTRICAL POWER RISER DEMOLITION
E-002.00	ELECTRICAL - CELLAR AND 1ST FLOOR PLANS
E-003.00	ELECTRICAL - 2ND, 3RD FLOORS AND ROOF PLANS
E-004.00	ELECTRICAL - ELEVATOR DETAILS
E-005.00	ELECTRICAL - RISER DIAGRAM
E-006.00	ELECTRICAL - SCHEDULES
E-007.00	ELECTRICAL - DETAILS

FIRE ALARM

FA-001.00	FIRE ALARM- NOTES, SYMBOLS, AND ABBREVIATIONS
FP-002.00	FIRE ALARM- CELLAR AND FIRST FLOOR PLANSPLAN
FP-003.00	FIRE ALARM- SECOND, THIRD AND ROOF PART PLANS

SCHEDULE D

Electrical Motor Control Equipment

(Reference: 01 3506, Article 3.8 of the DDC Standard General Conditions)

Requirements for electrical motor equipment may be included in one or more sections of the Specifications for the Contract for the Project. Schedule D set forth below delineates specific information for electrical motor control equipment. In the event of any conflict between the Specifications and this Schedule D, Schedule D shall take precedence; provided, however, in the event of an omission from Schedule D (i.e., Schedule D omits either a reference to or information concerning electrical motor equipment which is set forth in the Specifications), such omission from Schedule D shall have no effect and the Contractor's obligation with respect to the electrical motor control equipment, as set forth in the Specifications, shall remain in full force and effect.

DB Disconnect Circuit Breaker (Switch)	P Pilot Light	BG Break Glass Station
TS Thermal Switch	F Firestat	HOA Hand-Off Auto.
MS Magnetic Starter	T Thermostat	PB Push Button Station
CMS Comb. Mag. Starter	AL Alternator	RO Remote "off"

Equip. Ident.	Location	# of Units	HP or KW	Volts and Phase	Control Type: See legend above	Remarks:
ELEVATOR	EMR, 1 ST FLOOR	1	30HP	208V, 3 Ph	CMS	
HVAC-2	ROOF	1	54.93 KW	208V, 3 Ph	DS	
HVAC-3	ROOF	1	38.88 KW	208V, 3 Ph	DS	
HVAC-4	ROOF	1	88.15 KW	208V, 3 Ph	DS	
HVAC-5	ROOF	1	7.97 KW	208V, 3 Ph	DS	
AHU-1	EMR, 1 ST FLOOR	1	0.035 KW	208V, 1 Ph	DS	
ACCU-1	ROOF	1	2.46 KW	208V, 1 Ph	DS	
P-1, P-2	Boiler Room, 3 rd FLOOR	1+1	3 HP	208V, 3 Ph	DS/VSD	Lead-Lag Pkg
RP-1	Boiler Room, 3 rd FLOOR	1	1/6 HP	120V, 1 Ph	MS	

CP-1	EMR, 1 ST FLOOR	1	1/30 HP	208V, 1 Ph	DS	
SP-1	ELEVATOR, PIT	1	1/3 HP	120V, 1 Ph	DS	
EF-1	ELEVATOR, ROOF	1	0.25 HP	120V, 1 Ph	DS	
BOILER	Boiler Room, 3 RD FLOOR	1	1	120V, 1 Ph	BG	

SCHEDULE E

Separation of Trades

NOT USED FOR SINGLE CONTRACTS

SCHEDULE F

Submittals Schedule

(Reference: Section 01 3300 Article 1.5 (C) of the General Conditions)

The Schedule set forth below lists all submittal requirements for the Contract. In the event of any conflict between the Specifications and this Schedule F, Schedule F shall take precedence; provided, however, in the event of an omission from Schedule F (i.e., Schedule F omits either a reference to or information concerning a submittal requirement which is set forth in the Specifications), such omission from Schedule F shall have no effect and the Contractor's submittal obligation, as set forth in the Specifications, shall remain in full force and effect.

CONSULTANT: _____ DATE: _____

TELEPHONE NUMBER: _____

DDC PROJECT MANAGER: _____

TELEPHONE NUMBER: _____

APPROVED: _____
(DDC RESIDENT ENGINEER/CPM)

REPORT DATE		FMS ID #/PROJECT ID #: CONTRACT REGISTRATION #: PROJECT NAME:		CONTRACT # Contract 1 - GENERAL CONSTRUCTION																
SPEC. SECT. #	DESCRIPTION	COORD. WITH CONTR.	SUBMITTAL	SUB. DATE	REQ'D DEL.	FABRIC. TIME	SUBMISSIONS													
							SHOP DWG.	SAMPLE	CAT. CUTS	REC'D	RETD	ACTION	REC'D	RETD	ACTION	REC'D	RETD	ACTION		
01 3526	Safety and Health Program	X																		
01 3526	Contractor's Safety Plan	X																		
01 3526	Historic Treatment Plan	X																		
01 5000	Site Plan						X													
01 5000	Reports	X																		
01 5423	NYC DOB Scaffold & Sidewalk Shed Permits	X					X													
01 5423	Site Logistics/Site Safety Plan	X																		

01 5423	Scaffold & Shed Installation Drawings	X																			
01 5423	Instruction Program for Demonstration & Orientation	X																			
01 7900	Qualification Data		X																		
01 7900	Selective Removal and Demolition			X																	
024119	Cast in Place Concrete		X							X											
033000	Unit Masonry		X																		
042000	Structural Steel		X							X											
051200	Fluted Steel Deck		X							X											
053100	Metal Fabrication		X							X											
055000	Wood Nailers and Blocking		X							X											
061053	Maintenance of Membrane Roofing		X							X											
070150	Cementitious Waterproofing									X											
071613	Built-up Bituminous Roofing		X							X											
075100	Flushing and sheet metal		X							X											
076100	Firestopping Smoke Seals									X											
078400	Joint Sealers									X											

235201	Boiler Accessories																												
235223	Cast-Iron Boilers		X									X																	
235224	Fuel Burning Equipment																												
236313	Air Cooled Condensing Units			X																									
237313	Air Handling Units			X																									
238106	Packaged Rooftop Unit			X																									
260522	Wiring Systems																												
260523	Elevator Wiring																												
260526	Grounding																												
260533	Raceways, Fittings, Boxes and Accessories																												
262416	Panelboards																												
262419	Motors, Starters & Control Equipment																												
262812	Safety Switches																												
265190	Interior Lighting			X																									
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283101	Fire Detection and Alarm System			X									X																

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END OF SECTION

CONTRACT # 1
GENERAL CONSTRUCTION WORK

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SECTION 011010
SUMMARY OF WORK

PART 1 - GENERAL

1.01 WORK UNDER THE CONTRACT

Upgrade the existing facility which will include the rehabilitation of the main entrance to achieve barrier free accessibility, creation of a barrier free restroom on the second floor, installation of a new elevator to serve the first and second floors, replacing the boiler and hot water systems, new central air-conditioning units, modification of existing air-distribution system as required to effectively serve all areas of the building

The Work shall be as described in the Contract Documents and is to include, but not limited to the following:

A. Mechanical:

1. Replace four (4) the existing Air Handling Units HVAC-2, 3,4,5 with new Gas-Fired Rooftop Units with DX cooling coil.
2. Modification of air distribution system in areas shown on construction drawings. Replace six (6) VAV boxes.
3. Replace existing oil-fired boiler with new gas-fired hot water heating boiler and associated piping and component equipment in boiler room, such as pumps, expansion tank, chemical feeder, and air separator.
4. Provide new domestic hot water heater and associated piping and pump in Boiler room, as depicted under Plumbing section below.
5. Provide direct digital control (DDC) system for all new equipment and systems, and a building management system to control, monitor and/or alarm equipment operation.
6. Install a new split system Ac unit in elevator machine room and exhaust fan on the top of elevator shaft.

B. Electrical:

1. Disconnects power supply from existing HVAC equipment to be removed.
2. Provide power supply to new HVAC units, Boiler, and pumps.

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3. Provide special outlets dedicated circuits for the acoustics / sound system and other portable devices for G - space area.
4. Provide electrical installations power & lighting for new barrier free accessible bathroom.
5. Provide power for the new passenger elevator and associated Machine Room.
6. Install GFI receptacle on the roof.
7. Power requirements for all trades providing equipment.
8. Modify Fire Alarm system to provide duct and elevator smoke detectors, temper and flow switch.
9. Temporary Remove and reinstall lighting fixtures in areas where required for ductwork modification or Elevator installation.
10. Install new lighting fixtures in Elevator Machine Room.
11. Install new exist signs where shown.

C. Fire Protection (Sprinkler):

1. Provide new sprinkler head in elevator pit. Connect to the portable water pipe. Provide isolation and Check valves, flow switch.

D. Plumbing:

1. Provide for the demolition of existing toilets and associated piping systems on the second floor Men's toilet. Cap existing services for reconnection of new plumbing fixtures where possible.
2. Disconnect or remove existing gas piping running above roof to existing mechanical roof top units. Cap existing gas piping for reconnection new roof top units where possible.
3. Remove existing steam generated storage domestic water heater in the penthouse mechanical room and all related existing piping, valves, circulation pump, storage tank supports and controls.
4. Remove existing area drains outside at the existing entry way and existing storm water piping, including any required excavation, backfill of the trench into the building.
5. Provide a complete sanitary and vent system for the new ADA toilets and connect new piping into the

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existing sanitary and vent lines of adequate size above and below floor.

6. Provide new storm water drains and associated storm water piping at the building's main entrance. Include all work to connect new piping into the existing storm water piping buried below the existing concrete slab.
7. Provide new gas piping to new gas fired roof top units on the existing roof. And new piping to a new gas fired water heater in the existing penthouse mechanical room.
8. Provide domestic cold water supply to new plumbing fixtures, water heater and any equipment that required water. Include all required valves, chair carries and all associated items as required for proper operation of all plumbing fixtures or equipment.
9. Provide new domestic water storage heater in the penthouse mechanical room. Include reconnection to existing piping, hot water to new plumbing fixtures, hot water circulation pump, concrete pad, valves and controls.
10. Provide handicap accessible plumbing fixtures and accessories in ADA compliant toilet.

E. Architectural:

1. Installation of barrier free ramp at the main entrance.
2. Replacement of main entrance door and vestibule door.
3. Replacement of existing window in Security Office.
4. Installation of an elevator to serve the first and second floors.
5. Modification to the first and second floor areas affected by installation of new elevator.
6. Creation of a barrier free accessible restroom on the second floor.
7. Partial Roof replacement associated with installation of elevator bulkhead. Provide a new mail Shute next to the main entrance door.
8. Install wheelchair elevator in Room No. 112, Visual Arts.

F. Structural:

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1. Provide necessary structural modification compatible with architectural schemes for the installation of ADA ramp, as shown.
2. Provide necessary structural schemes, compatible with architectural schemes for the installation of an elevator to the second floor and Room 112 on the first floor for handicap accessibility.
3. Provide dunnage structure where shown.
4. Provide structural modification and reinforcing schemes for supporting new partitions, equipment, utility lines, etc., and for new floor and wall openings to accommodate all other architectural and engineering discipline schemes.
5. Provide floor opening and underpinning of existing structure at elevator pit.
6. Provide elevator shaft.
7. Provide Acoustical Barrier installation and supports.

1.02 ITEMS NOT INCLUDED

The following items shown on the Drawings are not included in the Work:

- A. Items indicated "By Others".
- B. Items indicated "N.I.C." (Not in Contract).
- C. Existing construction not indicated or specified to be removed, replaced or altered.

1.03 CUTTING, PATCHING AND REMOVALS

- A. Contractor shall do all cutting and patching, painting and finishing of existing work which is disturbed while performing the Work. Contractor shall be responsible for restoring new work which is damaged. All work shall be restored to provide a new appearance and to be structurally sound.
- B. The work shall be done by competent workmen skilled in the trade required by the restoration.
- C. Examination:
 1. Prior to cutting, drilling, or removal, investigate both sides of the surface involved. Determine the exact location of structural members.

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2. If unforeseen obstructions are encountered, take precautions necessary to prevent damage and obtain instructions from the Commissioner before proceeding with the Work.

D. Preparation:

1. Provide temporary shoring and other supports necessary to prevent settlement or other damage to existing construction, which is to remain.
2. Prepare existing surfaces properly to receive, and where required, to bond with the Work.

E. Patching:

1. Patch existing construction and finishes defaced, damaged, or left incomplete due to alterations or removals. Patching, except as otherwise indicated, shall be limited to the areas which have been cut or altered; match materials, finishes, underlying construction, and quality of area patched.
2. In rooms and locations where doors are removed, also remove the door stops and blocks thereof secured to wall or floors.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

HARLEM SCHOOL OF THE ARTS,
PHASE II BUILDING RENOVATIONS

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SECTION 024119
SELECTIVE REMOVALS & DEMOLITION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Extent of Work

Removal and demolition of selected items from selected areas as indicated on the Drawings; items to be removed include, but are not limited to, the following:

1. Exterior concrete stairs and ramp.
2. Structural framing.
3. Floor cover and on-floor slabs.
4. Partial walls.
5. Hot water boilers.
6. Air handler units.
7. Condensing units.
8. Return air fans.
9. Refrigerant and hot water piping.
10. Ductwork.
11. Pipe and duct insulation.
12. Hot water pumps.
13. Existing cable and conduit, junction and pull box(es), motor starters and switches, timers and etc.
14. Duct type smoke detectors.

1.02 SUSTAINABILITY REQUIREMENTS

A. Although this is not a LEED project, the Contractor shall implement practices and procedures to meet the Project's sustainable requirements. The Contractor shall ensure that the requirements related to these goals, as specified in this Section, are implemented to the fullest extent. Substitutions or other changes to the work shall not be proposed by the Contractor or their sub-contractors if such changes compromise the stated Sustainable Design Performance Criteria.

B. Sustainability requirements included in the Section are as follows:

1. Refrigerant recovery requirements.

2. Demolition waste management.
3. Management of dust and particulate matter.
4. Management of petroleum-contaminated material and/or hazardous waste in accordance with all applicable city, state, and federal regulations

1.03 REFERENCES

References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

A. New York State Department of Environmental Conservation

6 NYCRR Part 371 Identification and Listing of Hazardous Wastes

6 NYCRR Part 372 Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities

6 NYCRR Part 373 Hazardous Waste Treatment, Storage and Disposal Facility Permitting Requirements

STARS Memo #1 Petroleum-Contaminated Soil Guidance Policy

TAGM HWR-94-4046 Determination of Soil Cleanup Objectives and Cleanup Levels

B. United States Department of Transportation

49 CFR 172, Subpart C Shipping Papers

49 CFR 172, Subpart D Marking

49 CFR 172, Subpart F Placarding

49 CFR 172, Subpart G Emergency Response Information

49 CFR 173 General Requirements for Shipments and Packagings

49 CFR 177 Carriage by Public Highway

C. United States Environmental Protection Agency

40 CFR Part 261 Definition of RCRA Hazardous

Wastes

40 CFR Part 262 Identification and Listing of
Hazardous Waste

40 CFR Part 263 Standards Applicable to
Transporters of Hazardous Waste

40 CFR Part 265 Interim Status Standards for
Owners and Operators of Hazardous Waste Treatment,
Storage, and Disposal Facilities

- D. All applicable Department of Transportation and
Department of Sanitation Rules and Regulations

1.04 DEFINITIONS

A. Excavation

Excavation consists of removal of material encountered
to contract level, stockpiling, loading, handling and
subsequent legal disposal of such.

B. Petroleum-Contaminated Material

This material shall meet the NYSDEC STARS Memo #1
definition of petroleum-contaminated material.
Specifically, petroleum-contaminated material should be
evidenced by odor, visual impacts (e.g., staining),
proximity to existing or historic petroleum storage
tanks and systems, known or suspected releases and
exceed the guidance values provided in the NYSDEC STARS
Memo #1.

C. Hazardous Waste

Material that meets the definition of a Resource
Conservation and Recovery Act hazardous waste as
defined in 40 CFR Part 261 or 6 NYCRR Part 371.

1.05 SUBMITTALS

- A. Submit a schedule indicating proposed methods and
sequence of operations for selective removals and
demolition Work, prior to commencement of operations.
The sequence of operations shall be planned, in
detail, to ensure uninterrupted progress of library
daily activities.
- B. Submit details and procedures for dust and noise
control.

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- C. Demolition Schedule: Indicate overall schedule and interruptions required for utility and building services.
- D. Control Submittals:
 - 1. Permits: Submit one copy of each permit.
 - 2. Demolition Plan: For information only, submit one copy of the demolition plan required under
- E. Quality Control Submittals
 - 1. Contractor Qualifications
 - a. Provide proof of Contractor and Professional Engineer qualifications specified under "Quality Assurance".
 - b. Provide proof of Refrigerant Recovery Technician qualifications
- F. Sustainability Submittals
 - 1. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to **EPA** regulations. Include name and address of technician and date refrigerant was recovered.
 - 2. Statement of the measures taken to reduce air with dust and particulate matter.

1.06 RESPONSIBILITY, PROTECTION, DAMAGES, RESTRICTIONS

A. Condition of Space

The City of New York assume no responsibility for actual condition of the space in which removals and demolition Work is performed.

B. Protections

Provide temporary barricades and other forms of protection required to protect City of New York property, personnel, and general public from injury due to selective removals and demolition work.

- 1. Provide protective measures as required to provide free and safe passage of City of New York personnel, and the general public.

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2. Protect from damage existing finish work that is to remain in place and which becomes exposed during operations.
3. Protect floors with building paper or other suitable covering.
4. Protect utilities during Work of this section.

C. Damages

Promptly repair any and all damages to all property and finishes caused by the removals and demolition work; to the Commissioner's satisfaction and at no extra cost to the City of New York.

D. Explosives

The use of explosives is prohibited.

E. Power-driven Tools (for interior removals and demolition).

Only hand-held electric power-driven tools conforming to the following criteria shall be used to cut or drill masonry:

1. Electric Chiselling Hammer
 - a. Power Data 115 Volts AC
7-8 Amps
Three-wire grounded connection
 - b. Percussion 2400-2600 Impacts/Minute
 - c. Type/Size Hand-held (+ 18-inch length)
 - d. Unit Weight 12-15 pounds (minus chisel bit)
2. Electric Hammer Drill
 - a. Power Data 115 Volts AC
5-8 Amps
Three-wire grounded connection
 - b. Percussion 2400-3200 Impacts/Minute
 - c. Type/Size Hand-held (+ 18-inch length)
 - d. Unit Weight 12-15 pounds (minus chisel bit)
 - e. Speed Data 0-0500 RPM (Under load)

1.07 QUALITY ASSURANCE

- A. Permits: Before the Work of this Section is started, obtain all permits required by Federal, State, and local jurisdictions for all phases and operations of the Work.
- B. Qualifications
 - 1. Company specializing in performing the Work of this Section shall have a minimum of 3 years experience and shall have worked on projects of similar size.
 - 2. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.
- C. Regulatory Requirements
 - 1. Work of this Section shall conform to all requirements of the **NYC Building Code** and all applicable regulations and guidelines of all governmental authorities having jurisdiction, including, but not limited to, safety, health, and anti-pollution regulations. Where more stringent requirements than those contained in the Building Code or other applicable regulations are given in this Section, the requirements of this Section shall govern.
- D. Demolition Plan: Before the Work of this Section is started, prepare a detailed demolition plan. The demolition plan shall include, but not be limited to, detailed outline of intended demolition and disposal procedures. The demolition plan will not relieve the Contractor of complete responsibility for the successful performance of the Work, which shall conform to all requirements of the NYC Building Code and all applicable regulations and guidelines of all governmental authorities having jurisdiction, including, but not limited to, safety, health, and anti-pollution regulations. Where more stringent requirements than those contained in the Building Code or other applicable regulations are given in this Section, the requirements of this Section shall govern.
- E. Conform to the safety requirements of OSHA.

1.08 PROJECT CONDITIONS

- A. Conduct demolition to minimize interference with adjacent and occupied building areas.

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- B. Existing Paint: Assume existing painted surfaces to contain lead based paints. Take precautions as required to prevent spread of lead containing particles and dust. Specific requirements will be provided by Commissioner.
- C. Cease operations immediately if structure appears to be in danger and notify Commissioner. Do not resume operations until directed.
- D. Damages: Promptly repair any and all damages to all property and finishes caused by the removals and demolition work; to the Commissioner satisfaction and at no extra cost to City of New York.
- E. Verify the location and status of all utilities within the Contract Limit Line (CLL).
- F. Disconnect the following utilities:
 - 1. Gas: Comply with utility regulations.
 - 2. Electric: Comply with National Electric Code and utility regulations.
- G. Do not interrupt utility services to buildings which are to remain.

PART 2 - PRODUCTS - NOT APPLICABLE

PART 3 - EXECUTION

3.01 INSPECTION

- A. Prior to commencement of the selective removals and demolition Work, inspect the areas in which the Work will be performed. Determine and list the existing conditions of rooms or area surfaces and equipment. After the Work in each respective area is completed, determine if adjacent surfaces or equipment have been damaged as a result of the Work; if so, the damage shall be corrected at the Contractor's expense.

3.02 PREPARATION

- A. Search each building. Locate drums or containers of hazardous wastes. Remove hazardous wastes in accordance with Federal and State regulations.
- B. Remove loose equipment, materials, supplies, and furnishings (desks, chairs, beds, mattresses, furniture, etc.) from building prior to demolition.
- C. Remove items scheduled to be salvaged for the Facility,

and place in designated storage area.

3.03 REMOVALS AND DEMOLITION WORK

- A. Perform selective demolition Work in a systematic manner and use such methods as are required to complete the Work indicated, and in accordance with the Specifications and governing City, State, and Federal regulations.
- B. Wet down masonry and plaster materials during demolition to prevent spread of dust and dirt. Sprinkle debris, and use temporary enclosures as necessary to limit dust to lowest practicable level. Do not use water to extent causing flooding, contaminated runoff, or icing.
- C. Do not place demolition equipment in buildings where it will create excessive loads on supporting walls, floors, and frames. Promptly remove accumulated debris and materials.
- D. Lower structural framing members to ground by hoist or crane.
- E. Demolition:
 - 1. Notify affected utility companies before starting work and comply with their requirements.
 - 2. Mark location and termination of utilities.
 - 3. Erect, and maintain temporary barriers and security devices, including warning signs and lights, and similar measures, for protection of the public, occupants, and existing improvements indicated to remain.
 - 4. Erect and maintain weatherproof closures for exterior openings.
 - 5. Erect and maintain temporary partitions to prevent spread of dust, odors, and noise to permit continued Owner occupancy.
 - 6. Prevent movement of structure; provide temporary bracing and shoring required to ensure safety of existing structure.
 - 7. Provide appropriate temporary signage including signage for exit or building egress.
 - 8. Do not close or obstruct building egress path.
 - 9. Do not disable or disrupt building fire or life safety systems without three (3) days prior written notice to the City of New York.

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10. Conduct demolition to minimize interference with adjacent and occupied buildings.
 11. Maintain protected egress from and access to adjacent existing buildings at all times.
 12. Do not close or obstruct roadways or sidewalks without permits.
 13. Cease operations immediately when structure appears to be in danger and notify Commissioner.
 14. Disconnect and remove designated utilities within demolition areas.
 15. Cap and identify abandoned utilities at termination points when utility is not completely removed. Annotate Record Drawings indicating location and type of service for capped utilities remaining after demolition.
 16. Demolish in orderly and careful manner. Protect existing structure and supporting structural members.
 17. Remove demolished materials from site except where specifically noted otherwise. Do not burn or bury materials on site.
 18. Remove materials as Work progresses. Upon completion of Work, leave areas in clean condition.
 19. Remove temporary Work.
- F. When suspended ceiling (or portions thereof) are indicated to be removed; unless indicated otherwise:
1. Remove all items attached to the surfaces of the ceiling to be removed.

3.03 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove debris, rubbish and other materials resulting from the removals and demolitions from the building immediately; transport and legally dispose of materials off-site. Disposal method shall be in accordance with City, State, and Federal regulations.
- B. Do not store, sell, or burn materials on the property.

3.04 CLEAN-UP AND REPAIR

- A. Upon completion of removals and demolition Work, remove tools, equipment and all remaining demolished materials from the site.

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- B. Repair all damaged areas caused by the removals and demolition Work. Repair adjacent construction or surfaces soiled or damaged by selective demolition work.
- C. All areas in which Work was performed under this Section shall be left "broom-clean."

3.05 OWNERSHIP OF MATERIALS

- A. All equipment, materials, and items removed shall remain the property of the City of New York, if desired; equipment, material and items not desired to be re-used or retained by the Commissioner shall be removed from the site by the Contractor. The Commissioner will designate which equipment, materials and items will be retained.

END OF SECTION

SECTION 028013 – GENERAL CONTRACTOR WORK
ALLOWANCE FOR INCIDENTAL ASBESTOS ABATEMENT

1.01 SCOPE FOR ASBESTOS ABATEMENT WORK

- A. The "General Conditions" apply to the work of this Section.
- B. The Asbestos abatement contractor shall remove asbestos containing materials as needed to perform the other work of this Contract when discovered during the course of work. When required, the Asbestos abatement contractor shall replace the ACM with non-asbestos containing materials. An allowance of **\$15,000.00** for the **General Contractor** is herein established for this incidental work when so ordered and authorized by the Commissioner.
- C. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE RULES AND REGULATIONS OF THE ASBESTOS CONTROL PROGRAM AS PROMULGATED BY TITLE 15 CHAPTER I OF RCNY AND NEW YORK STATE DEPARTMENT OF LABOR INDUSTRIAL CODE RULE 56 CITED AS 12 NYCRR, PART 56 WHICHEVER IS MORE STRINGENT AS PER LATEST AMENDMENTS TO THESE LAWS AND AS MODIFIED HEREIN BY THESE SPECIFICATIONS.
- D. ALL DISPOSAL OF ASBESTOS CONTAMINATED MATERIAL SHALL BE PER LOCAL LAW 70/85.
- E. THE ASBESTOS ABATEMENT CONTRACTOR'S ATTENTION IS DIRECTED TO THE FACT THAT CERTAIN METHODS OF ASBESTOS ABATEMENT ARE PROTECTED BY PATENTS. TO DATE, PATENTS HAVE BEEN ISSUED WITH RESPECT TO "NEGATIVE PRESSURE ENCLOSURE" OR "NEGATIVE-AIR" OR "REDUCED PRESSURE" AND "GLOVE BAG".
- F. THE ASBESTOS ABATEMENT CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR AND SHALL HOLD THE DEPARTMENT OF DESIGN AND CONSTRUCTION AND THE CITY HARMLESS FROM ANY AND ALL DAMAGES, LOSSES AND EXPENSES RESULTING FROM ANY INFRINGEMENT BY THE ASBESTOS ABATEMENT CONTRACTOR OF ANY PATENT, INCLUDING BUT NOT LIMITED TO THE PATENTS DESCRIBED ABOVE, USED BY THE ASBESTOS ABATEMENT CONTRACTOR DURING PERFORMANCE OF THIS AGREEMENT.
- G. "Asbestos" shall mean any hydrated mineral silicate separable into commercially usable fibers, including but not limited to chrysotile (serpentine), amosite (cumingtonite-grunerite), crocidolite (riebeckite), tremolite, anthrophyllite and actinolite.

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- H. Prior to starting, the Asbestos abatement contractor must notify the Commissioner of the Department of Design and Construction if he/she anticipates any difficulty in performing the Work as required by these Specifications. The Asbestos abatement contractor is responsible to prepare and submit all filings, notifications, etc. required by all City, State and Federal regulatory agencies having jurisdiction.

The Asbestos abatement contractor is responsible for submitting the Asbestos Project Notification Form (ACP-7 Form) to the Department of Environmental Protection, Asbestos Control Program, as per Title 15, Chapter I of RCNY and to the NYSDOL as per Industrial Code Rule 56.

The Asbestos abatement contractor is responsible for preparing, and submitting Asbestos Variance Application (ACP-9). If a Variance is required, the Asbestos abatement contractor is responsible to retain a NYSDOL Asbestos Project Designer, as defined in Title 15, Chapter 1 of the RCNY to prepare and submit the required variance.

The General contractor is responsible for preparing and submitting an Asbestos Abatement Permit and/or Work Place Safety Plans (WPSP) that may be required for the completion of the Contract or incidental work. If such plans are required, the Asbestos abatement contractor is responsible to retain a NYSDOL Licensed Design Professional as defined in Title 15, Chapter 1 of the RCNY to prepare and submit the required plans.

The Asbestos abatement contractor is responsible for the submission of all required documents to the NYCDEP to acquire the appropriate Asbestos Project Conditional Closeout (ACP-20) and/or Asbestos Project Completion Forms (ACP-21) on a timely basis for the completion of the incidental work encountered under this contract.

The Asbestos abatement contractor will be required to attend an on-site job meeting with the Construction Project Manager prior to the start of work to examine conditions and plan the sequence of operations, etc.

The Asbestos abatement contractor shall have a NYSDOL/NYCDEP Asbestos Supervisor onsite to oversee the work and conduct a final visual inspection as required by both Title 15, Chapter 1 of the RCNY and NYSDOL Industrial Code Rule 56.

- I. All work shall be done during regular working hours unless the Asbestos abatement contractor requests authorization to work in other than regular working hours and such authorization is granted by the Commissioner. (Regular work hours are those hours during which any given facility, in which work is to be done, is customarily open and functioning, normally between the hours of 8:00 A.M. and 4:00 P.M. Monday - Friday.) If such work schedule is authorized by the Commissioner, the work shall be done at no additional cost to the City.

- J. The Commissioner may order that work be done in other than regular working hours as herein by defined and this order may require the Asbestos abatement contractor to pay premium or overtime wages to complete the work. If the Commissioner orders work in other than regular working hours, the Asbestos abatement contractor shall multiply the unit price for that portion of the work requiring premium wages by 1.50 when computing payment in accordance with Paragraph 1.09. All requests for premium payment must be supported by certified payroll sheets and field sheets approved by the Construction Project Manager.

1.02 QUALIFICATIONS OF ASBESTOS ABATEMENT CONTRACTOR

- A. Requirements: The asbestos abatement contractor must demonstrate compliance with the special experience requirements set forth in subparagraphs (1) through (5) below. The asbestos abatement contractor must, submit documentation demonstrating compliance with all listed requirements. Such documentation shall include without limitation, all required licenses, certificates, and documentation.
1. The asbestos abatement contractor must, whether an individual, corporation, partnership, joint venture or other legal entity, must demonstrate for the three year period prior to the work, that it has been licensed by the New York State Department of Labor, as an "Asbestos abatement contractor".
 2. The asbestos abatement contractor must, for the three year period prior to the work, have been in the business of providing asbestos abatement services as a routine part of its daily operations.
 3. The asbestos abatement contractor proposing to do asbestos abatement work must be thoroughly experienced in such work and must provide evidence of having successfully performed and completed in a timely fashion at least five (5) asbestos abatement projects of similar size and complexity. The aggregate cost of these projects must be at least \$250,000.00 in each of the three years.
 4. For each project submitted to meet the experience requirements set forth above, the asbestos abatement contractor must submit the following information for the project; name and location of the project; name title and telephone number of the owner or the owner's representative who is familiar with the asbestos abatement contractor's work, brief description of the work completed as a prime or sub-asbestos abatement contractor; amount of contract or subcontract and the date of completion.
 5. The asbestos abatement contractor must demonstrate that it has the financial resources, supervisory personnel and equipment necessary to carry out the work and to comply with the required performance schedule,

taking into consideration other business commitments. The asbestos abatement contractor must submit such documentation as may be required by the Department of Design and Construction to demonstrate that it has the requisite capacity to perform the required services of this contract.

- B. Insurance Requirements: The asbestos abatement contractor must provide asbestos liability insurance in the following amount: 1 million dollars per occurrence, 2 million dollars aggregate (combined single limit). The City of New York shall be named as an additional insured on such insurance policy.
- C. Throughout the specifications, reference is made to codes and standards which establish qualities and types of workmanship and materials, and which establish methods for testing and reporting on the pertinent characteristics thereof.

1.03 ASBESTOS ABATEMENT CONTRACTOR RESPONSIBILITIES

The Asbestos abatement contractor will visit the subject location within one (1) working day of notification to ascertain actual work required. If the project is identified as being "urgent", then work shall commence no later than 48 hours from the time of notification. In this event, the asbestos abatement contractor shall immediately notify when applicable EPA NESHAPS Coordinator, NYSDOL Asbestos Control Bureau and NYCDEP Asbestos Control Program of start of the work and file the necessary Asbestos Notifications and any applicable Variance Applications with the regulatory agencies cited above.

In the event that the project is not classified as "urgent" the Asbestos abatement contractor shall notify the EPA NESHAPS Coordinator, NYSDOL and NYCDEP by submitting the requisite asbestos project notification forms, postmarked 10 days before activity begins if 260 linear feet or more and/or 160 square feet or more of asbestos containing material will be disturbed.

The following information must be included in the notification:

- A. Name and address of building City or operator;
- B. Project description:
 - 1. Size - square feet, number of linear feet, etc;
 - 2. Age - date of construction and renovations (if known);
 - 3. Use - i.e., office, school, industrial, etc.
 - 4. Scope - repair, demolition, cleaning, etc.
- C. Amount of asbestos involved in work and an explanation of techniques used to determine the amount;

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- D. Building location/address, including Block and Lot numbers;
- E. Work schedule including the starting and completion dates;
- F. Abatement methods to be employed;
- G. Procedures for removal of asbestos-containing material;
- H. Name, title and authority of governmental representative sponsoring project.

1.04 WORK INCLUDED IN UNIT PRICE

The Asbestos abatement contractor will be paid a basic unit price of **\$25.00** per square feet for the removal and disposal of asbestos containing material and replacement of the same with non-asbestos containing materials.

Unit price shall include all costs necessary to do the work of this Contract, including but not limited to: labor, materials, equipment, utilities, disposal, insurance, overhead and profit.

1.05 AIR MONITORING – ASBESTOS ABATEMENT CONTRACTOR

- A. "Air Sampling" shall mean the process of measuring the fiber content of a known volume of air collected during a specific period of time. The procedure utilized for asbestos follows the NIOSH Standard Analytical Method 7400 or the provisional transmission electron microscopy methods developed by the USEPA and/or National Institute of Standard and Technology which are utilized for lower detectability and specific fiber identification.
- B. Air monitoring of Asbestos abatement contractor's personnel will be performed in conformance with OSHA requirements, (All costs associated with this work are deemed included in the unit price.).
- C. Qualifications of Testing Laboratory:

The industrial hygiene laboratory shall be a current proficient participant in the American Industrial Hygiene Association (AIHA) PAT Program. The laboratory identification number shall be submitted and approved by the City. The laboratory shall be accredited by the AIHA and New York State Department of Health Environmental Laboratory Approval Program (ELAP).

Note: Work area air testing and analysis before, during and upon completion of work (clearance testing) will be performed by a Third Party Air Monitor under separate Contract with the City.

1.06 THIRD PARTY MONITORING AND LABORATORY

- A. The NYCDDC, at its own expense, will employ the services of an independent Third Party Air Monitoring Firm and Laboratory. The Third Party Air Monitor will perform air sampling activities and project monitoring at the Work Site.
- B. The Laboratory will perform analysis of air samples utilizing Phase Contrast Microscopy (PCM) and/or Transmission Electron Microscopy (TEM).
- C. The Third Party Air Monitoring Firm and the designated Project Monitor shall have access to all areas of the asbestos removal project at all times and shall continuously inspect and monitor the performance of the Asbestos abatement contractor to verify that said performance complies with this Specification. The Third-Party Air Monitor shall be on site throughout the entire abatement operation.
- D. The NYCDDC will be responsible for costs incurred with the Third Party Air Monitoring Firm and laboratory work. Any subsequent additional testing required due to limits exceeded during initial testing shall be paid for by the Asbestos abatement contractor.

1.07 PAYMENT REQUEST DOCUMENTATION

- B. The following information shall be included for each payment request:
 - 1. Description of work performed.
 - 2. Linear footage and pipe sizes involved.
 - 3. Square footage for boiler & breaching insulation removed.
 - 4. Square footage of non pipe and boiler areas removed, patched, enclosed, sealed, or painted.
 - 5. Square footage of encapsulation, sealing, patching, and painting involved.
 - 6. Total cost associated with compliance with the assigned task.
 - 7. Architectural, Electrical, HVAC, Plumbing, etc. work incidental to the Asbestos Abatement Work.
 - 8. A certified copy (in form 4312-39) to the Comptroller or Financial Officer of the New York City to the effect that the financial statement is true.
 - 9. A signed copy (in form 6506q-6) of certificate of compliance with non-discriminatory provisions of the Contract.

10. Attach a copy of valid workmen compensation insurance.
 11. Valid asbestos insurance per occurrence.
 12. General liability insurance when required.
- C. Each payment request shall include a grand total for all work completed that billing period, the landfill waste manifests and a copy of waste transporter permit. The Department of Design and Construction will inspect the work performed, review the cost and approve or disapprove requests for payment.
- D. EXPOSURE LOG: With this final payment, the Asbestos abatement contractor shall submit a listing of the names and social security numbers of all employees actively engaged in the abatement work of this Contract. This list shall include a summary showing each part of the abatement work in which the employee was engaged and the dates thereof.

1.08 QUANTITY CALCULATIONS

In order to determine the square footage involved for the various pipe sizes of pipe insulation that might be encountered, the following table is to be used.

PIPE INSULATION SIZE O.D.	PIPE SIZE O.D.	SQUARE FOOTAGE PER LINEAR FOOT
2-1/2"	1/2"	0.65
2-3/4"	3/4"	0.72
3"	1"	0.79
3-1/4"	1-1/4"	0.85
3-1/2"	1-1/2"	0.92
4"	2"	1.05
4-1/2"	2-1/2"	1.18
5"	3"	1.31
6"	3-1/4"	1.57
7"	3-1/2"	1.83
8"	4"	2.09
9"	5"	2.36
10"	6"	2.62
12"	8"	3.14
14"	10"	3.67
16"	12"	4.19
18"	14"	4.71

1.09 METHOD OF PAYMENT

Payment shall be made in accordance with Items A through R below. Payment shall be calculated based on the actual quantity of the item performed by the asbestos abatement

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contractor, times the unit price specified below. Credits may apply to certain times, as specified below.

- A. **REMOVAL, DISPOSAL AND REPLACEMENT OF ASBESTOS CONTAINING PIPE INSULATION:** Actual linear footage, multiplied by the square footage factor listed for the respective pipe size in Section 1.08, multiplied by the unit price in Section 1.04.

EXAMPLE: 100 lin.ft. of 1/2" pipe and 100 lin.ft. of 6" pipe, including elbows, tees. Flanges, etc.

100 X 0.65 = 65 sq.ft. 65 x unit price = Payment

100 X 2.62 = 262 sq.ft. 262 x unit price = Payment

- B. **REMOVAL, DISPOSAL AND REPLACEMENT OF BOILER INSULATION:** (all types including Silicate Block and including the removal/replacement of metal jacketing) Payment shall be made at 1.5 times the unit price per square foot.

EXAMPLE: Item B. removal and replacement of 1000 S.F. of boiler insulation (incl. Silicate block)

1000 S.F. X (1.5) X the Unit Price = Payment

- C. **REMOVAL, DISPOSAL AND REPLACEMENT OF TANK INSULATION:** (all types including removal/replacement of metal jacketing) Payment shall be made at 1.5 times the unit price per square foot.

- D. **REMOVAL, DISPOSAL AND REPLACEMENT OF BOILER UPTAKE, & BREACHING INSULATION:** (all types including stiffening angles and wire lath) Payment shall be made at 2.0 times the unit price per square foot.

- E. **REMOVAL, DISPOSAL AND REPLACEMENT OF DUCT INSULATION:** Payment shall be made at 1.0 times the unit price per square foot.

- F. **REMOVAL, DISPOSAL AND REPLACEMENT OF SOFT ASBESTOS CONTAINING MATERIAL:** (Including sprayed-on fire proofing and sound proofing) Payment shall be made at 1.0 times the unit price per square foot of surface area. Area of irregular surfaces must be calculated and confirmed with DDC representative.

- G. **ACOUSTIC PLASTER REPAIR AND/OR ENCAPSULATION:** Payment shall be made at 0.5 times the unit price per square foot.

- H. **PATCHING OR REPAIR** of items listed in A through F will be paid at 0.33 times the unit price per square foot.

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- I. **REMOVAL, DISPOSAL AND REPLACEMENT OF WATERPROOFING ASBESTOS CONTAINING MATERIAL:** (including friable and non-friable waterproofing material from interior and exterior walls, floors, foundations, penetrations, louvers, vents and openings other than windows, doors and skylights) Payment shall be made at 0.5 times the unit price per square foot.
- J. **REMOVAL, DISPOSAL AND REPLACEMENT OF ASBESTOS CONTAINING ELECTRICAL WIRING INSULATION:** (including friable and non-friable wiring insulation) Payment shall be made at 0.33 times the unit price per square foot.
- K. **PAINTING:** Payment shall be made at 0.05 times the unit price per square foot.
- L. **REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING PLASTER:** from ceilings and walls, including any wire lath and disposal as asbestos containing waste. Payment shall be made at 0.80 times the unit price per square foot.
- M. **REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING FLOOR TILES, CEILING TILES, TRANSITE PANELS:** (including any adhesive, glue, mastic and/or underlayment) and disposal as asbestos containing waste. Payment shall be made at 0.40 times the unit price per square foot. If multiple layers are discovered, each additional layer shall be paid at 0.20 times the unit price per square foot.
- N. **ADDITIONAL CLEAN UP/HOUSEKEEPING OF WORK AREA:** (excluding pre-cleaning of work area required by regulations) HEPA vacuuming and wet cleaning of asbestos contaminated surface. Payment shall be made at 0.20 times the unit price per square foot. When GLOVE BAG is employed to remove ACM, cost of HEPA vacuuming and wet cleaning of floor area up to 3 feet on each side of glove-bag shall be included in unit price and no extra payment will be made.
- O. **REMOVAL, DISPOSAL OF ASBESTOS-CONTAINING ROOFING MATERIAL:** including mastic, flashing and sealant compound and provide temporary asbestos-free roof covering consisting of one layer of rolled roofing paper sealed with asphaltic roofing compound. Payment shall be made at 0.8 times the unit price per square foot. Credit at a rate of 0.33 times the unit price will be taken for each square foot of temporary roof covering which the Asbestos abatement contractor is directed not to install.
- P. **PICK-UP AND DISPOSAL OF GROSS DEBRIS:** (excluding any waste generated from abatement under Item A-R) at a rate of \$150 per cubic yard for asbestos contaminated waste and \$75 per cubic yard for non-asbestos contaminated waste. This cost includes all labor and material cost associated with work.

- Q. **REMOVAL OF ASBESTOS-CONTAINING BRICK, BLOCK, MORTAR, CEMENT OR CONCRETE:** along with all surfacing materials including wire lath and/or other supporting structures and disposal as ACM waste. Payment shall be made at a rate of \$25.00 per cubic foot of material removed.
- R. **REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING WINDOW/DOOR CAULKING:** including friable and non-friable caulking, weather-stripping, glazing, sealants or other waterproofing materials applied to windows, doors, skylights, etc. Payment shall be made at the rate of \$400.00 per opening regardless of size or configuration. This cost includes labor, consumable materials, set-up/breakdown, removal and disposal, as required.

Note 1: CREDIT: For items listed in A through F, a credit at a rate of 0.33 times the unit price, times the respective multiplier (for each item) will be taken for each square foot of insulation which the asbestos abatement contractor is not directed to reapply.

Note 2: MINIMUM PAYMENT: The minimum payment per call at any individual job sites or various job sites during the same day will be eight hundred dollars (\$800.00).

Note 3: All payments shall be made as described in paragraph 1.09 herein.

Note 4: WORKING HIGHER THAN 12 FEET ABOVE FLOOR LEVEL OR WORK REQUIRING COMPLEX SCAFFOLDING OR CONSTRUCTION WORK PLATFORMS: Provisions are made in this Contract to compensate the Asbestos abatement contractor for work performed in locations that are difficult to access due to work at elevations that are significantly higher than the normal work level. The unit price for these items will be paid at 1.20 times the unit price described in Paragraphs 1.09, A through R for those portions of the work that are more than twelve (12) feet above the grade for that would be judged as the normal working level.

1.10 GUARANTEE

- A. Work performed in compliance with each task shall be guaranteed for a period of one year from the date the completed work is accepted by the Department of Design and Construction.
- B. The Commissioner of The Department of Design and Construction will notify the Asbestos abatement contractor in writing regarding defects in work under the guarantee.

1.11 OCCUPANCY OF SITE NOT EXCLUSIVE

Attention is specifically drawn to the fact that contractors, performing the work of other Contracts, may be brought upon any of the work sites of this Contract. Therefore, the Asbestos abatement contractor shall not have exclusive rights to any site of his work and shall fully cooperate and coordinate his work with the work of other contractors who may

be brought upon any site of the work of this Contract. This paragraph applies to those areas outside the regulated Work Area as defined by Title 15, Chapter I of RCNY.

1.12 SUBMITTALS

A. Pre-Construction Submittals:

1. Attend a pre-construction meeting scheduled by the City of New York Department of Design and Construction. This meeting shall also be attended by a designated representative of the City of New York third party air monitoring firm, facility manager and the Construction Project Manager. At this meeting, the Asbestos abatement contractor shall present three copies of the following items:

a. Asbestos abatement contractor's scope of work, work plan and schedule.

b. Asbestos project notifications, approved variances and plans to Government Agencies.

c. Copies of Permits, clearance and licenses if required.

d. Schedules: the Asbestos abatement contractor shall provide to the Construction Project Manager a copy of the following schedules for approval. Once approved, schedules shall be maintained and updated as received. Asbestos abatement contractor shall post a copy of all schedules at the site:

(1) A construction schedule stating critical dates of the project including, but not limited to, mobilization, Work Area preparation, demolition, gross removal, fine cleaning, encapsulation, inspections, clearance monitoring, and phase of refinishing and final inspections. The schedule shall be updated biweekly, at a minimum.

(2) A schedule of staffing stating number of workers per shift per activity, name and number of supervisor(s) per shift, shifts per day, and total days to be worked.

(3) Submit all changes in schedule or staffing to the Construction Project Manager prior to implementation.

e. Written description of emergency procedures to be followed in case of injury or fire. This section must include evacuation procedures, source of medical assistance (name and telephone number to nearest

hospital) and procedures to be used for access by medical personnel (examples: first aid squad and physician). NOTE: Necessary Emergency Procedures Shall Take Priority Over All Other Requirements of These Specifications.

- f. Material Safety Data Sheets (MSDS) for encapsulants, sealants, firestopping foam, cleaners/disinfectants, spray adhesive and any and all potentially hazardous materials that may be employed on the project. No work involving the aforementioned will be allowed to proceed until MSDS are reviewed.
- g. Worker Training and Medical Surveillance: The Asbestos abatement contractor shall submit a list of the persons who will be employed by him /her to perform the removal work. Present evidence that workers have received proper training required by the regulations and the medical examinations required by OSHA 29 CFR 1926.1101.
- h. Logs: Specimen copies of daily progress log, visitor's log, and disposal log.
 - (1) The Asbestos abatement contractor shall provide a permanently bound log book of minimum 8-1/2" x 11" size at the entrance to the Worker and Waste Decontamination enclosure system as hereinafter specified. Log book shall contain on title page the project name, name, address and phone number of the Asbestos abatement contractor; name, address and phone number of Asbestos abatement contractor and City's third party air monitoring firm; emergency numbers including, but not limited to local Fire/Rescue Department. Log book shall contain a list of personnel approved for entry into the Work Area.
 - (2) All entries into the log shall be made in non-washable, permanent ink and such pen shall be strung to or otherwise attached to the log to prevent removal from the log-in area. Under no circumstances shall pencil entries be permitted. Any significant events occurring during the abatement project shall be entered into the log. Upon completion of the job, the Asbestos abatement contractor shall submit the logbook containing a day-to-day record of personnel log entries countersigned by the Construction Project Manager every day.
- i. Worker's Acknowledgments: Submit statements signed by each employee that the employee has received training in the proper handling of ACM, understands the health implications and risks

involved; and understands the use and limitations of the respiratory equipment to be used.

B. During Construction Submittals:

1. Security and safety logs showing names of person entering workspace, date and time of entry and exit, record of any accident, emergency evacuation, and any other safety and/or health incident.
2. Progress logs showing the number of workers, supervisors, hours of work and tasks completed shall be submitted daily to the Construction Project Manager.
3. Floor plans indicating Asbestos abatement contractor's current work progress shall be submitted for review by the Construction Project Manager.
4. All Asbestos abatement contractors' air monitoring and inspection results.

C. Project Closeout Submittals:

Upon completion of the project and as a condition of acceptance, the Asbestos abatement contractor shall present two copies of the following items, bound and indexed:

1. Lien Waivers from Asbestos abatement contractor, Sub-Asbestos abatement contractors and Suppliers,
2. Daily OSHA air monitoring results,
3. All Waste Manifests (Asbestos and Construction Debris), seals and disposal logs,
4. Field Sign-In/Sign-Out Logs for every shift,
5. Copies of all Building Department Forms and Permits,
6. A Letter of Compliance stating that all the work on this project was performed in accordance with the Specifications and all applicable Federal, State and Local regulations,
7. All Warranties as stated in the Specifications,
 - a. Fully executed disposal certificates and transportation manifest.

8. Project Record: The Asbestos abatement contractor shall maintain a project record for all small and large asbestos projects. During the project, the project record shall be kept on site at all times. Upon completion of the project, the project record shall be maintained by the building owner. The project record shall be submitted to DDC as part of the close out documents. The project record shall consist of:
 - a. Copies of licenses of all asbestos abatement contractors involved in the project;
 - b. Copies of NYCDEP and NYSDOL supervisor and handler certificates for all workers engaged in the project;
 - c. Copies of all project notifications and reports filed with NYCDEP, NYSDOL and USEPA for the project, with any amendments or variances;
 - d. Copies of all asbestos abatement permits, including associated approved plans and work place safety plan;
 - e. A copy of the air sampling log and all air sampling results;
 - f. A copy of the abatement asbestos abatement contractor's daily log book;
 - g. Copies of all asbestos waste manifests;
 - h. A copy of all Project Monitor's Reports (ACP-15).
 - i. A copy of each ATR-1 Form completed for the asbestos project (if required).
 - j. A copy of each Asbestos Project Conditional Closeout Report (ACP-20) if required.
 - k. A copy of the Asbestos Project Completion Form (ACP-21).

1.13 PROTECTION OF FURNITURE AND EQUIPMENT

Cover all furniture and equipment that cannot be removed from Work Areas. Movable furniture and equipment will be removed from Work Areas by the Asbestos abatement contractor prior to start of work. At the conclusion of the work (after final air testing), the Asbestos abatement contractor will remove all plastic covering on walls, floors, furniture, equipment and reinstall furniture and equipment. He shall remove and store all sheaths, curtains and drapes, and reinstall same following final clean up.

1.14 UTILITIES

A. General:

All temporary facilities shall be subject to the approval of the Commissioner. Prior to starting work at any site, locations and/or sketches (if required) of temporary facilities must be submitted to the Construction Project Manager for the required approval.

B. Water:

The Department of Design and Construction will furnish all water needed for construction, at no cost to the Asbestos abatement contractor in buildings under their jurisdiction. However, it is the responsibility of the Asbestos abatement contractor to ensure that hot water is provided for showering in the decontamination unit. The Asbestos abatement contractor shall furnish, install and maintain any needed equipment to meet these requirements at his own expense.

C. Electricity:

The Department of Design and Construction will furnish all electricity needed for construction, at no cost to the Asbestos abatement contractor in a building, under their jurisdiction. The Asbestos abatement contractor is responsible for routing the electric power to the abatement Work Area.

All temporary lighting and temporary electrical service for Work Area shall be in weatherproof enclosures and be ground fault protected.

D. In leased spaces, arrangements for water supplies and electricity must be made with the landlord. However, all such arrangements must be made through and are subject to approval of the Department of Design and Construction. Utilities will be provided at no cost to the Asbestos abatement contractor. However, it is the Asbestos abatement contractor's (or the General contractor's) responsibility to furnish and install a suitable distribution system to the Work Area. This system will be provided at no cost to the City.

1.15 FEES

The Asbestos abatement contractor shall be responsible for any and all fees or charges imposed by Local, State or Federal Law, Rule and Regulation applicable to the work specified herein, including fees or charges which may be imposed subsequent to the date of the Bid opening.

END OF SECTION

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SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Furnish material, equipment, labor, services required to provide for cast-in-place concrete. Work includes but is not limited to structural, sitework, slabs, concrete fire protection, equipment pads, and other items listed herein. Allow ample time and facility for the Work of other Divisions to be installed.

1.02 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION - Not Used

1.03 RELATED SECTIONS - Not Used

1.04 REFERENCES

References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

- A. American Society of Testing and Materials (ASTM) standards, latest editions.
- C31 Standard Practice for Making and Curing Concrete Test Specimens in the Field.
 - C33 Standard Specifications for Concrete Aggregates.
 - C39 Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
 - C42 Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
 - C78 Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Three-point Loading)
 - C94 Standard Specification for Ready-Mixed Concrete.
 - C127 Standard Test Method for Density, Relative Density (Specific Gravity) and Absorption of Course Aggregate.
 - C131 Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - C138 Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete.

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- C143 Standard Test Method for Slump of Hydraulic Cement Concrete.
- C150 Standard Specification for Portland Cement.
- C172 Standard Method of Sampling Freshly Mixed Concrete.
- C173 Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
- C192 Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory.
- C231 Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
- C260 Standard Specifications for Air-Entraining Admixtures for Concrete.
- C309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
- C330 Standard Specification for Lightweight Aggregates for Structural Concrete.
- C387 Standard Specification for Packaged, Dry, Combined Materials for Mortar and Concrete.
- C494 Standard Specification for Chemical Admixture for Concrete.
- C496 Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens.
- C567 Standard Test Method for Density of Structural Lightweight Concrete.
- C685 Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing.
- C1315 Standard Specification for Liquid-Forming Compounds Having Special properties for Curing and Sealing Concrete
- E154 Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs
- E329 Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials used in Construction
- E1643 Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs
- E1745 Standard Specification for Plastic Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs

B. American Concrete Institute (ACI) standards, latest editions.

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- ACI 117 Standard Tolerances for Concrete Construction and Materials
- ACI 211.1 Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
- ACI 211.2 Standard Practice for Selecting Proportions for Structural Lightweight Concrete.
- ACI 212.3R Chemical Admixtures for Concrete.
- ACI 214 Evaluation of Results of Tests Used to Determine the Strength of Concrete.
- ACI 301 Specifications for Structural Concrete for Buildings.
- ACI 302.1R Guide for Concrete Floor and Slab Construction.
- ACI 304R Guide for Measuring, Mixing, Transporting and Placing Concrete.
- ACI 305R Hot Weather Concreting.
- ACI 306R Cold Weather Concreting.
- ACI 308 Standard Practice for Curing Concrete.
- ACI 309R Guide for Consolidation of Concrete.
- ACI 311.4R Guide for Concrete Inspection.
- ACI 318-02 Building Code Requirements for Reinforced Concrete (With modifications per Section BC 1908 of the 2008 NYC Building Code).

1.05 DEFINITIONS

- A. Exposed to view
Situated so that it can be seen from eye level from a public location. A public location is that which is accessible to persons not responsible for operation or maintenance of the building.
- B. Lightweight concrete
Concrete intentionally made to have low density by use of lightweight aggregate conforming to ASTM C330 and required to have an air-dry unit weight less than .115 lb/ft³.
- C. Normal weight concrete
Concrete for which density is not a controlling attribute, made with aggregates of the types covered by ASTM C33 and usually having unit weights in the range of 135 to 160 lb/ft³.

1.06 DESIGN REQUIREMENTS

A. Performance Characteristics:

1. Interior slabs: Normal weight concrete with a minimum compressive strength of 4000 psi, non-air entrained, and a maximum water to cement ratio of 0.45.
2. Exterior slabs on grade, exposed to the elements: Normal weight concrete with a minimum compressive strength of 4000 psi, air entrained, and a maximum water to cement ratio of 0.40.
3. Interior slabs of superstructure: Lightweight concrete with a minimum compressive strength of 4000 psi, air-entrained.

1.07 SUBMITTALS

A. Product Data

Submit manufacturers' information for the following:

1. Admixtures
2. Curing compounds
3. Hardener
4. Bonding Agent
5. Vapor barrier

B. Samples

Submit samples of the following items

1. Vapor Barrier

C. Quality Control Submittals

1. Design Data: Submit design mixes for concrete, including list of admixtures to be used, to the Testing Agency, the Special Inspector, and the Commissioner. Design mix for lightweight concrete shall include both the dry and saturated (SSD) weights of the aggregate.
2. Test Reports: Strength Test Report for preliminary trial mix (with all admixtures).
3. Certificates
 - a. Building Department form TR3, signed and sealed by the licensed concrete laboratory and concrete producer.
 - b. Admixture manufacturer's certificate stating that the chloride content of the admixture will not exceed 0.05% by weight.

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- c. Concrete laboratory license number and certification of meeting ASTM E329 standards.
 - d. Concrete producer's certificate stating the plant and trucks are NYSDOT approved.
 - e. Concrete producer's Computer Batch Ticket in accordance with Section BC 1905.8.2 of the 2008 NYC Building Code must be presented at site before concrete is placed for every load of concrete delivered.
4. Manufactures' Instructions
Waterstop manufacturer's instructions for proper installation of waterstop, including manner in which splices are to be made.
 5. Contractor Qualifications
Provide proof of Installer and Producer qualifications specified under "Quality Assurance".

1.08 QUALITY ASSURANCE

A. Qualifications

1. Concrete Installer: Company specializing in performing the Work of this Section shall have three years minimum experience on successful projects of similar size.
2. Concrete Producer: Company specializing in the production of concrete shall **be** certified by the National Ready Mixed Concrete Association (NRMCA) and shall have certification by either a New York City Agency or the NYS Department of Transportation. The plant shall use NYSDOT approved trucks and drivers shall be certified by the NRMCA.
3. Concrete Laboratory: Concrete laboratory providing design mixes shall be New York City licensed and shall meet the requirements of ASTM E329.

B. Regulatory Requirements

1. Building Code: Work of this Section shall conform to all requirements of the NYC Building Code and all applicable regulations of governmental authorities having jurisdiction including safety, health, noise, and anti-pollution regulations. Where more severe requirements than those contained in the Building Code are given in this Section, the requirements of this Section shall govern.

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2. Industry Standards: The ACI Standards listed under references apply to Work of this Section. Where more severe requirements than those contained in the Standards are given in this Section or the Building Code, requirements of this Section or the Building Code shall govern. The Contractor shall keep a copy of ACI SP-15 - "Field Reference Manual" at the site.
3. Recommendations or suggestions in the codes and references listed in this Article and under "References" shall be deemed to be mandatory unless they are in violation of the Building Code.

C. **Certifications**

1. Cast-in-Place Concrete shall conform to the material acceptance, certification, and inspection requirements of Sections BC 1701 and BC 1905 of the 2008 NYC Building Code.
2. Cement and aggregate shall be acquired from the same source for all work. If a change in suppliers is required, a new mix submittal must be produced with the new material and submitted for approval.

D. **Coordination**

Coordinate this work with the work of other Divisions so that items to be installed are done so correctly and in proper sequence.

1.09 DELIVERY, STORAGE AND HANDLING

- A. Protect material from the elements and from other damage on the site.
- B. Replace and pay for material and work damaged to the satisfaction of the Commissioner.

1.10 ENVIRONMENTAL REQUIREMENTS

- A. Adequately protect concrete placed during rain, sleet, or snow, or when the mean daily temperature falls below 40°F or rises above 90°F as provided in Article 3.05.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Lightweight Aggregate
 1. Northeast Solite Corporation
 2. Norlite Corporation

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- B. Admixtures
 - 1. Euclid Chemical Company, Cleveland, OH 44110
 - 2. Master Builders,
 - 3. Sika Chemical Corporation,
 - 4. Anti Hydro Company,
 - 5. Chem Masters,
 - 6. W.R. Grace & Co.,
 - 7. St. Lawrence Cement Company,
- C. Curing Compounds
 - 1. Euclid Chemical Company, Cleveland, OH 44110
 - 2. Master Builders,
- D. Vapor Barrier
 - 1. Stego Industries, San Juan Capistrano, CA 92675
 - 2. Reef Industries, Houston, TX 77075
 - 3. W.R. Meadows, Hampshire, IL 60140-0338
- E. Bonding Agent
 - 1. Sto Concrete Restoration Division, Atlanta GA
 - 2. Sika Corp, Lyndhurst NJ
 - 3. Euclid Chemical Company, Cleveland, OH 44110

2.02 MATERIALS

- A. Cement

Shall conform to ASTM C150 and shall be of the non air-entrained types:

 - 1. Unless otherwise specified or approved by the Commissioner, cement shall be Type I or II.
 - 2. Type II shall be used for exterior pavements.
 - 3. Cement shall not contain ingredients that would result in more than two percent air being entrained in the concrete.
- B. Admixtures
 - 1. General
 - a. The use of admixtures shall comply with the requirements of Section BC 1903.6 of the 2008 NYC Building Code.
 - b. The final soluble chloride content in concrete, percent by weight of cement, due to

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the addition of admixtures and other ingredients shall not exceed 0.05 at 28 days. All admixtures shall be non-corrosive.

c. The amount of cement required by the Building Code may be reduced by 40% as per the code with the use of slag cement that has been reviewed and approved by the Commissioner.

2. Air-entraining admixture: Shall conform to ASTM C260.
3. Water-reducing admixture: Shall conform to ASTM C494, Type A or D, and contain no more chloride ions than found in drinking water.
4. High range, water-reducing admixture (superplasticizer): Shall conform to ASTM C494, Type F or G, and contain no more chloride ions than found in drinking water.
5. Water reducing, accelerating admixture: Shall conform to ASTM, Type C or E, and contain no more chloride ions than found in drinking water.
6. Water reducing, retarding admixture: Shall conform to ASTM C494, Type D, and contain no more chloride ions than found in drinking water.
7. Slag cement: ASTM C989, Grade 100 or 120. Shall be GranCem slag cement as manufactured by the St. Lawrence Cement Company.

C. Water

Shall be clean potable water free of injurious foreign matter conforming to the requirements of Section BC 1903.4 of the Building Code.

D. Aggregates

Fine and coarse aggregates shall be regarded as separate ingredients. Each size of coarse aggregate, as well as the combination of sizes when two or more are used, shall conform to the appropriate grading requirements of the applicable ASTM specifications. Maximum size of coarse aggregate shall conform to paragraph 3.3.2 of ACI 318.

1. Aggregates for normal weight concrete shall conform to ASTM C33 and be of Size No.57, No.67 and/or No.8.
2. Aggregates for lightweight concrete shall conform to ASTM C330 and be of sizes 3/4" to No.4, 1/2" to No.4, and/or 3/8" to No.8.

E. Curing Compounds

1. Non-strippable

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- a. Clear Curing and Sealing Compound (A.I.M. Regulations - VOC Compliant, 350 g/l): Liquid type membrane-forming curing compound, clear styrene acrylate type, complying with ASTM C1315, Type I, Class A, 25% solids content minimum. Moisture loss shall be not more than 0.40 Kg/m² when applied at 300 sq. ft./gal. Manufacturer's certification is required.
- b. Curing Compounds shall be "Super Diamond Clear VOX" by The Euclid Chemical Company or "Masterkure 100W" by Master Builders.

F. Bonding Agent

1. Epoxy/acrylic resin that will not form a vapor barrier with the concrete with the following properties:
 - a. Bond strength of 1800 psi in 2 hours when tested in accordance with ASTM C882.
 - b. Flexural strength of 2000 psi in 28 days when tested in accordance with ASTM C78.
 - c. Tensile strength of 600 psi in 28 days when tested in accordance with ASTM C496.
2. Bonding agent shall be "CR246 Sto Bonding and Anti-corrosion Agent" by Sto Concrete Restoration Division, Armatec 110 by Sika Corp, or Corr-bond by Euclid Chemical Company.

G. Vapor Barrier

1. Vapor Barrier shall meet the following properties:
 - a. Minimum 15-mil polyolefin geomembrane.
 - b. Water Vapor Barrier - ASTM E1745, Class A
 - c. Permeance Rating - ASTM E1745/E96 or E1249/E96: 0.018 perms or lower
 - d. Puncture Resistance by ASTM E1745: Class A, minimum 2300 grams
 - e. Tensile Strength by ASTM E1745: Class A, minimum 45 lbf/in
2. Accessories
 - a. High density polyethylene tape with pressure sensitive adhesive
 - b. Pipe boot for piping and conduits constructed from vapor barrier and tape
3. Shall be:
 - a. Stego Wrap 15 mil Vapor Barrier by Stego Industries

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- b. Griffolyn 15 mil Green by Reef Industries
- c. Perminator 15 mil by W.R. Meadows

2.03 MIXES

A. General

Concrete for all parts of the Work shall be of the specified quality capable of being placed without excessive segregation and, when hardened, of developing all characteristics required by the Specifications and Drawings.

B. Strength

Strength requirements given in Part 1 of this Specification are based on 28-day compressive strength (56 days for concrete containing 40% alternate cementitious material - slag), unless high early strength is specified, in which case required strengths are based on 7-day compressive strength (28-day for concrete containing 40% alternate cementitious material - slag).

C. Method of Proportioning

1. Proportion, batch, and mix concrete in accordance with Section BC 1905. The Contractor shall be responsible for, and bear all costs associate with the filing and securing of approvals, of any, for form TR-3: Technical Report Concrete Design Mix, including, but not limited to, engaging the services of a New York City licensed concrete testing laboratory for review and approval concrete mix, testing, signatures and professional seals, etc., compliant with NYC Department of Building requirements, for each concrete mix. Proportion concrete mix in accordance with Section BC 1905.3.
2. Mix designs are specific to material used, concrete producer, and method of placement. Each mix design must be reviewed by the Commissioner and accepted prior to placement along with accompanying TR3 signed by the lab and concrete producer.

D. Normal Weight Concrete

1. Unless otherwise specified, proportion and produce normal weight concrete to have a maximum slump of 4" or less. A tolerance of up to 1" above the indicated maximum shall be allowed for individual batches provided the average for all batches or the most recent 10 batches tested, whichever is

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fewer, does not exceed the maximum limit. The slump shall be determined by ASTM C143. Concrete containing High Range Water Reducer shall have a slump not exceeding 9", unless otherwise approved by the Commissioner. The concrete shall arrive at the job site at a slump of 2" to 3", be verified, and the HRWR admixture added to increase the slump to the approved level.

2. Where Normal weight concrete is indicated to be air-entrained, provide the following air content for the grading size of coarse aggregate as follows:
 - a. No.8.....7 $\frac{1}{2}$ %
 - b. No.57 or 67.....6%

Tolerance on air content as delivered shall be +1.5%.

E. Structural Lightweight Concrete

Lightweight concrete, including concrete used as roof fill and other locations indicated to receive fill, shall conform to the following requirements:

1. Coarse aggregate shall be 100% lightweight aggregate, expanded clay, shale, or slate produced by the rotary kiln method, conforming to the requirements of ASTM C330. Provide 3/8" maximum size coarse aggregate for beam and/or column encasement.
2. The concrete shall not exceed an air dry unit weight of 115 lb/ft³ as measured in accordance with ASTM C567. The wet unit weight of the fresh concrete shall be within +3 lbs of the wet unit weight which is to be determined and established from the preliminary tests or prequalified mixes.
3. Unless otherwise specified, proportion and produce lightweight concrete to have a slump of 3" or less. A tolerance of up to 1" above the indicated maximum shall be allowed for individual batches provided the average for all batches or the most recent 10 batches tested, whichever is fewer, does not exceed the maximum limit. The slump shall be determined by ASTM C143. Concrete containing High Range Water Reducer shall have a slump not exceeding 9", unless otherwise approved by the Commissioner. The concrete shall arrive at the job site at a slump of 3" to 4", be verified, and the HRWR admixture added to increase the slump to the approved level.
4. Provide the following air content for the grading size of coarse aggregate as follows:
 - a. 3/8"....4 $\frac{1}{2}$ - 7 $\frac{1}{2}$ %

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b. 3/4"....4 - 6%

Tolerance on air content as delivered shall be +1.5%.

5. Mix design shall include the dry and saturated (SSD) weights of the lightweight aggregate. The saturated weight shall take into account the internal and surface moisture content that will be in the aggregate at the time of mixing.
6. Mix design shall be based on the recommendations of the lightweight aggregate producer.

2.04 SOURCE QUALITY CONTROL

A. Tests

1. The Testing Laboratory will review and/or check test proposed materials for compliance with the Specifications prior to construction.
2. The Testing Laboratory will perform field tests as work progresses as listed in "Field Quality Control".

B. Inspection

1. Testing Laboratory

a. A Licensed Concrete Testing Laboratory to inspect batching of the concrete, at the Authorities discretion, and perform all field tests. The Laboratory will perform the following services:

- 1) Review and/or check-test the Contractor's proposed materials for compliance with the Specifications.
- 2) Review and/or check-test the Contractor's proposed mix design.
- 3) Secure production samples of materials at plants or stock-piles during the course of the Work and test for compliance with the Specifications.
- 4) Perform tests during construction as required by Section BC 1905.6.2 of the 2008 NYC Building Code. The Laboratory will obtain samples at the mixer and when directed by the Engineer at the point of placement by the following methods:
 - a) Secure composite samples in accordance with ASTM C172. Each sample shall be obtained from a

different batch of concrete on a random basis, avoiding any selection of the test batch other than by a number selected at random before commencement of concrete placement.

- b) Mold and cure specimens from each sample in accordance with ASTM C31 and perform strength tests.
 - b. The Commissioner may assign a qualified concrete technician to be stationed at the batch plant depending on the size of the project or evidence of poor concrete breaks. At least one qualified concrete technician will be stationed at the site to obtain the test specimens.
 - c. The Laboratory will be responsible to and under the supervision of the Special Inspector.
2. Special Inspector
- a. Under the requirements of Section BC 1704.4 a Special Inspector will supervise the testing of the materials and the inspection of concrete construction. The Special Inspector is responsible any required filing with the Building Department, as well as maintaining a log book of the concrete work.
 - b. The Special Inspector will check that all required tests are made and the results submitted and shall have the right to order the Contractor to make such changes of the mix of concrete as required to produce concrete of the necessary strength. The Special Inspector will also report to the Building Department Superintendent any deviation from the requirements of the Code, as indicated by records of inspection and reports of tests.
3. Notification
- a. Notify the Commissioner in writing at least forty-eight hours in advance of each concrete placement. The Commissioner will notify the Testing Laboratory immediately to order out the necessary concrete technicians to cover the work.
 - b. Once the concrete technicians are ordered out and a cancellation follows, the Contractor may be charged for each technician so ordered to appear, unless a cancellation order is

issued to the Laboratory by 3 PM the day before the concrete placement.

- c. During the placement of the concrete, notify the Commissioner immediately of any delay at the concrete plant or at the job site. Where the Commissioner decides to provide a technician at the plant, do not mix concrete or add admixtures unless the Technician is present. Do not add admixtures to be added at the site unless the Technician is present.

4. Contractors Responsibility for Quality Control

- a. The Contractor will receive a copy of all reports prepared by the Laboratory and/or Special Inspector. Copies of the daily concrete reports prepared by the Special Inspector will be available for reference.
- b. The Contractor will therefore be afforded an opportunity to review all reports and mix data and submit to the Special Inspector any recommendations in changing the mixes provided they conform to the Code and Specifications. Any testing required because of changes in materials or proportions of the mix requested by the Contractor, as well as any extra testing of concrete or materials occasioned by the failure to meet Specification requirements shall be at the Contractor's expense. The Contractor, at any time, can arrange to have independent tests made at own expense by an approved laboratory and submit the reports and recommendations to the Special Inspector and Commissioner.
- c. The tests and inspections, as provided in the Code, do not in any way relieve the Contractor of responsibility to construct the Work in accordance with the Drawings and Specifications and to use safe, standard methods of construction at all times, safeguarding the public, workmen, and structure. The Contractor shall be solely responsible for the physical control of the materials and concrete mixes, and shall see that such mix designs, tests, and controls are in accordance with the Code and Specifications. Contractor shall deliver to the testing organization concrete samples for the hardness testing.
- d. It shall be the Contractor's complete responsibility to adjust, alter, and/or correct any controls necessary in materials and/or concrete operation based upon tests and inspections made by the Commissioner or

the Contractor's independent tests. If, during the course of the concrete operations, a lower water content or more cement is needed per cubic yard above that used in the approved design mix, provide same at no additional cost to the Commissioner.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Prior to placement of concrete, verify that the concrete cover over the reinforcement is that specified on Drawings.
- B. Verify that anchor bolts, reinforcement, and all other embedded items are provided and held securely, positioned accurately, and will not be a detriment to concrete placement.
- C. Examine all adjoining work on which this Work is in anyway dependent for proper installation and workmanship. Report to the Commissioner any condition that prevents the performance of this Work.

3.02 PROTECTION

- A. Protect concrete members on grade and the subgrade from freezing before and after installation. Provide blankets and other items necessary.
- B. Protect adjacent finish materials and previously poured concrete against spatter during concrete placement.
- C. Provide and maintain barricades and safeguards around openings, etc. to protect workmen from injury and to comply with all Building Code, OSHA, and other authorities having jurisdiction regulations.

3.03 PREPARATION

- A. Remove ice, excess water, trash, and rubbish from forms.
- B. Remove hardened concrete from inner surfaces of conveying equipment and all formwork, reinforcement, and dowels.
- C. Prepare previously placed concrete to be in contact with new concrete in the manner described under "Construction Joints".

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- D. Prepare existing concrete to be in contact with new concrete by roughening and cleaning the surface and applying a bonding agent. Surface must be free of laitance. Concrete must be placed after agent cures and within 20 hours of applying bonding agent. If time elapses, apply a new application in accordance with the directions of the manufacturer.
- E. In case a conflict arises between concrete as poured and other Work that requires cutting into concrete beams, columns, walls, or slabs, submit requests to the Commissioner, who will issue instructions accordingly. Cutting of concrete is otherwise prohibited.
- F. Do not place concrete on frozen ground.

3.04 JOINTS AND EMBEDDED ITEMS

A. Construction Joints

- 1. Make joints not shown on Drawings at locations that will least impair the strength of the structure. Such location is subject to the approval of the Commissioner.
- 2. Continue reinforcement across joints. Provide longitudinal keys at least 1½" deep in walls and provide other keys as required. Drawings indicate keys or roughened surface at interface of walls and footings.
- 3. Thoroughly clean concrete surface of oil, grease, and other contaminants and remove all laitance prior to placement of adjoining concrete. Roughen surface of the concrete in an approved manner that will expose the aggregate uniformly to a 1/4" amplitude and will not leave laitance, loosened particles of aggregate, or damaged concrete at the surface. Dampen surface immediately prior to placement.
- 4. Construction joints shall be made in accordance with Section BC 1906.8 of the Building Code.

3.05 MIXING AND PLACING CONCRETE

A. General

- 1. Notify the Commissioner at least 48 hours in advance of each concrete placement. Do not place concrete without approval of the Special Inspector.
- 2. Do not allow rainwater to increase mixing water nor damage surface finish.

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3. When placing concrete in cold weather (air temperature below 40°F), concrete shall contain either an accelerating admixture or use Type III cement.

B. Mixing

1. Batch, mix, and transport ready-mixed concrete in accordance with the appropriate sections of ASTM C94 and Section BC 1905.8.2 of the 2008 NYC Building Code. Truck mixers and agitators shall meet the requirements of the Truck Mixers Manufacturer's Bureau or shall comply with Section 8.1.2 of ASTM C94 and shall be NYSDOT approved. All trucks shall have working revolution counters and site gages. Batch all other concretes in accordance with subsection 4.3.1 of ACI 301 only if permitted by the Commissioner and Special Inspector.
2. Batch ready-mixed concrete only in plants that are NRMCA certified and NYSDOT approved. Only plants that are NYSDOT approved with current certification meeting the requirements for certification of the NRMCA for automatic batching and automatic recording will be permitted. Concrete shall be batched by the use of automation.
3. Unless otherwise approved by the Commissioner, concrete shall be deposited within 1½ hours or 300 revolutions of the mixing drum, whichever comes first, after introduction of water to the cement or cement to the aggregate. When the ambient temperature rises above 90°F, the time shall be decreased to 1 hour.
4. Batch lightweight concrete using the saturated weight of aggregate, which shall take into account the internal and surface moisture content.
5. Tempering and control of mixing water
 - a. Mix concrete only in quantities for immediate use. Concrete that has started to set shall not be retempered, but shall be discarded. Water shall not be added at the site.
 - b. For concrete containing HRWR (Superplasticizer), if loss of slump occurs, HRWR may be redosed at the site as long as a "flash set" has not occurred. Redosage procedures must be discussed and approved by the Engineer and the admixture manufacturer at the Pre-Concrete Conference.

6. Weather Conditions

- a. Cold weather (Air Temperatures below 40°F)
- 1) Concrete shall have either an accelerating admixture or use Type III cement.
 - 2) The temperature of concrete delivered at the site shall conform to the temperature limitations given in **Section 5** of ACI 301.
 - 3) If water or aggregate is heated above 100°F, combine the water with the aggregate in the mixer before cement is added. Cement shall not be mixed with water or with mixtures of water and aggregate having a temperature greater than 100°F.
 - 4) Detailed requirements are given in ACI 306R.
- b. Hot Weather (Air Temperatures above 90°F)
- 1) Cool the ingredients before mixing, or substitute flake ice or well-crushed ice of a size that will melt completely during mixing for all or part of the mixing water if, due to high temperature, low slump, flash set, or cold joints are encountered.
 - 2) Detailed requirements are given in ACI 305.

7. Admixtures - General

- a. Add all admixtures prior to mixing unless otherwise specified or directed.
- b. Air-entraining admixtures and other chemical admixtures shall be charged into the mixer as solutions and shall be measured by means of an approved mechanical dispensing device. The liquid shall be considered a part of the mixing water. Admixtures that cannot be added in solution may be weighed or may be measured by volume if so recommended by the manufacturer. The accuracy of measurement of any admixture shall be within ± 3 percent.
- c. If two or more admixtures are used in the concrete, add them separately to avoid possible interaction that might interfere with the efficiency of either admixture or adversely affect the concrete. Do not charge admixtures into the mixer in such a manner that they will come in direct contact with the cement.

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- d. Use of accelerating admixtures or Type III cement shall not relax cold weather placement requirements.
- e. Use of retarding admixtures in hot weather must be approved by the Special Inspector. Use of such admixtures will not relax hot weather placement requirements.

C. Placing

- 1. General: Place concrete in accordance with ACI 304R, ACI 318, and Sections BC 1905.9 and BC 1905.10 of the 2008 NYC Building Code.
- 2. Conveying
 - a. Handle concrete from the mixer to place of final deposit as rapidly as practicable by methods that will prevent separation or loss of ingredients and in a manner that will assure that the required quality of concrete is obtained.
 - b. Conveying equipment shall be approved and shall be of a size and design such that detectable setting of concrete shall not occur before adjacent concrete is placed. Conveying equipment shall be cleaned at the end of each operation or workday. Conveying equipment and operations shall conform to the following additional requirements:
 - 1) Truck mixers, agitators, and non-agitating units and their manner of operation shall conform to the applicable requirements of ASTM C94.
 - 2) Belt conveyors shall be horizontal or at a slope which will not cause excessive segregation or loss of ingredients. Concrete shall be protected against undue drying or rise in temperature. An approved arrangement shall be used at the discharge end to prevent apparent segregation. Mortar shall not be allowed to adhere to the return length of the belt. Long runs shall be discharged into a hopper or through a baffle.
 - 3) Chutes shall be metal or metal-lined and shall have a slope not exceeding 1 vertical to 2 horizontal and not less than 1 vertical to 3 horizontal. Chutes more than 20' long and chutes not meeting the slope requirements may be used provided they discharge into a hopper before distribution.

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- 4) Pumping or pneumatic conveying equipment shall be of suitable kind with adequate pumping capacity. Pneumatic placement shall be controlled so that segregation is not apparent in the discharged concrete. The loss of slump in pumping or pneumatic conveying equipment shall not exceed 2". Pumping is permitted only if a pump mix is approved. Concrete shall not be conveyed through pipe made of aluminum or aluminum alloy.
3. Depositing: Detailed recommendations are given in ACI 304R.
 - a. General
 - 1) Deposit concrete continuously, or in layers of such thickness that no concrete will be deposited on concrete that has hardened sufficiently to cause the formation of seams or planes of weakness within the section. If a section cannot be placed continuously, locate construction joints at points as provided for in the Drawings, shop drawings, or as approved.
 - 2) Carry out placement at such a rate that the concrete that is being integrated with fresh concrete is still plastic. Do not deposit concrete that has partially hardened or has been contaminated by foreign material.
 - 3) Place concrete in a manner that uniformly distributes the material over the metal deck in order to avoid overloading the deck joints.
 - 4) Remove temporary spreaders in forms when the concrete placing has reached an elevation rendering their service unnecessary. They may remain embedded in the concrete only if made of metal or concrete and if prior approval has been obtained.
 - 5) Placing of concrete in supported elements shall not be started until the concrete previously placed in columns and walls is no longer plastic.
 - b. Segregation: Deposit concrete as nearly as practicable in its final position to avoid segregation due to rehandling or flowing. Do not subject concrete to any procedure that will cause segregation. The maximum drop

height shall be five feet. Provide drop tubes for placement in forms and other locations where drop height exceeds the indicated maximum.

c. Consolidation

- 1) Consolidation of concrete and the use and type of concrete shall be in accordance with ACI 309R.
 - 2) Where a surface mortar is to be the basis of the finish, the coarse aggregate shall be worked back from the forms with a suitable tool so as to bring a full surface of mortar against the form, without the formation of excessive surface voids.
 - 3) Consolidate all concrete by vibration so that the concrete is thoroughly worked around the reinforcement, around embedded items and into corners of forms, eliminating all air or stone pocket or weakness. Internal vibrators shall be the largest size and most powerful that can be used in the Work, as described in Table 5.1.5 of ACI 309R, with a minimum frequency of 7000 revolutions per minute and shall be operated by competent workmen. Overvibrating and use of vibrators to transport concrete within forms is not permitted. Insert and withdraw vibrators at many points, from 18" to 30" apart. At each insertion, the duration shall be sufficient to consolidate the concrete but not sufficient to cause segregation, generally from 5 to 15 sec duration, and shall reach the bottom of the pour. Keep a spare vibrator on the job site during all concrete placing operations.
4. Cold Weather Concrete Placement and Protection: Detailed requirements are given in ACI 306.

When the mean daily temperature of the atmosphere is less than 40°F during concreting, or within 72 hours there after (or the air temperature is not greater than 50°F for more than one-half of any 24-hr period for a period of 3 consecutive days), follow the procedures outlined in ACI 306R to protect the concrete. Provide a cold weather concreting plan as well as list of equipment and material (e.g. thermometers, blankets) to be used to the Special Inspector. Temperature of the plastic concrete shall be no lower than 55°F. Heat

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all forms, reinforcing steel, and surfaces to receive concrete above the freezing point and keep them completely free of frost, snow, and ice. Protection shall consist of insulating boards, blankets, or heated enclosures. Underside of slabs shall be heated during placement and protection period. Initial protection period shall be as indicated in tables 5.1 and 5.3 of ACI 306R. Maximum temperature drop of concrete surface after protection is removed shall follow table 5.5 of ACI 306R.

5. Hot Weather Placement and Protection: When the mean daily temperature of the atmosphere is over 90°F during concreting, follow the procedures outlined in ACI 305R to protect the concrete.
 - a. All concrete, at the time it is actually deposited in the forms, shall have a temperature not lower than 50°F but never above 90°F.
 - b. Cover reinforcement with water-soaked burlap to cool steel so its temperature will not exceed the ambient air temperature immediately before concrete placement.
 - c. Dry surfaces that are to receive concrete should be wet down before commencing placement of concrete and the temperature of such surfaces should not exceed the temperature of the concrete being placed.

3.06 FINISHING OF FORMED SURFACES AND REPAIR OF SURFACE DEFECTS

A. General

1. Remove forms as soon as practicable. Refer to Section BC 1906.5 of the 2008 NYC Building Code.
2. Repair surface defects, including tie holes and cracks.
3. Remove oil, grease, compounds, and other contaminants from surfaces and areas to be repaired, those surfaces in contact with sprayed fireproofing, and those receiving coatings (ie. plaster, waterproofing, paint, and membranes of any kind).
4. Provide finishes specified below immediately after form removal.
5. Provide curing and protection.

B. Repair of Surface Defects

1. Remove all honeycombed and other defective concrete down to sound concrete. If chipping is necessary, the edges shall be perpendicular to the

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surface or slightly undercut. Undercut all cracks a minimum of 1" x 1". No featheredges will be permitted. Dampen the area to be patched and an area at least 6" wide surrounding it to prevent absorption of water from the patching mortar. A bonding grout shall be prepared using a mix of approximately 1 part cement to 1 part fine sand passing a No. 30 mesh sieve, mixed to the consistency of thick cream, and then well brushed into the surface.

2. The patching mortar shall be made of the same materials and of approximately the same proportions as used for the concrete, except that the coarse aggregate shall be omitted and the mortar shall consist of not more than 1 part cement to 2¹/₂ parts sand by damp loose volume. Substitute white Portland cement for a part of the gray portland cement on exposed concrete in order to produce a color matching the color of the surrounding concrete, as determined by a trial patch. If the material color cannot be matched properly, the Contractor shall use a specialty repair mortar of the Commissioner's choice at the Engineer's discretion. The quantity of mixing water shall be no more than necessary for handling and placing. Mix the patching mortar in advance and allowed to stand with frequent manipulation with a trowel, without addition of water, until it has reached the stiffest consistency that will permit placing.
3. After surface water has evaporated from the area to be patched, brush the bond coat well into the surface. When the bond coat begins to lose the water sheen, apply the premixed patching mortar. The mortar shall be thoroughly consolidated into place and struck off so as to leave the patch slightly higher than the surrounding surface. To permit initial shrinkage, leave it undisturbed for at least 1 hr before final finishing. Keep the patched area damp for 7 days. Do not use metal tools for finishing a patch in a formed wall that will be exposed.

C. Finishing

1. Smooth Rubbed Finish
 - a. Provide for smooth form finish.
 - b. Produce on newly hardened concrete no later than the day following form removal.
 - c. Wet the surfaces and rub with a No. 16 carborundum brick or other equal abrasive to obtain a smooth, even surface of uniform

appearance without applying any cement or other coating.

- d. Obtain the final finish by thoroughly rubbing with a No. 30 carborundum brick. The surface shall be wet for a period of 3 days. The Commissioner shall be the sole judge of whether the finish is proper.

D. Acceptance of Concrete Finish

If the finish produced is not acceptable to the Commissioner, the Contractor shall be responsible for all costs incurred to produce an acceptable finish by whatever means determined by the Commissioner.

3.07 SLABS

A. Placement

1. Mixing and placing shall be carefully coordinated with finishing. Do not place concrete on the subgrade or forms more rapidly than it can be spread, straightedged, and darbied or bull floated. Provide leveling, floating, troweling, etc. at the correct time interval after pouring to prevent dusting and a non-durable surface as specified in ACI 302.1R. These operations must be performed before bleeding water has an opportunity to collect on the surface.
2. To obtain good surfaces and avoid cold joints, the size of finishing crews shall be planned with due regard for the effects of concrete temperature and atmospheric conditions on the rate of hardening of the concrete.
3. Provide extra concrete as required to make up for any deflections in the metal deck and steel beams in order to provide a level surface using a laser. The beam, girder, and deck deflections may total up to 1¹/₂".

B. Leveling and Finishing

1. General

- a. Carefully provide slab depressions as required for the finishes indicated on the Drawings.
- b. Unless otherwise indicated on the Drawings or specified herein, make all slabs even and uniform in appearance and, where no slope is required, level within plus or minus 3/16" in ten feet. All float-finished slabs shall achieve a tolerance of 5/16" in 10 feet and all trowel-finished surfaces shall achieve a tolerance of 3/16" in 10 feet. For small

areas such as stairs, and for areas that will be finished with wood flooring, such as gymnasiums, tolerance shall be 1/8" in ten feet. Tolerance is measured by placing a freestanding 10-foot straight edge anywhere on the slab and allowing it to rest upon two high spots within 72 hours after slab concrete placement. The gap between the straight edge and floor shall not exceed the above-specified tolerance.

- c. Where floor drains or floor slopes are indicated, slope slabs uniformly to provide even fall for drainage.
- d. Follow detailed recommendations for finishing given in ACI 301, Section 5, and ACI 302.1R.
- e. Protect finishes from contamination from time of placing until time of acceptance, placement of topping, etc.
- f. Remove defects of sufficient magnitude to show through floor coverings or that do not meet tolerances by grinding.

2. Finishes

- a. Surfaces intended to receive roofing, waterproofing membranes: Level and wood float surface. Leave surface free from depressions, bulges, rough spots, and other defects.
- b. Pavements: Finish surface to a true smooth plane and texture with a toothed roller or float with a wood float. Score concrete pavement in squares of approximately 5'-0" and/or as shown on Drawings. Each rectangular slab shall have all edges neatly rounded with proper tools and be bounded on all sides by a troweled border about 1" in width.
- c. Driveways: Level and float surface. Follow with a broom finish perpendicular to direction of traffic.

C. Slabs on Grade

1. General

- a. Aggregate base and crushed stone base material and preparation is part of Work of Section 310000 (Later).
- b. Where pavements to remain are damaged or destroyed as a result of the Work, patch,

- repair, or replace as required. Color to match existing.
- c. Subgrade and/or aggregate base/crushed stone base shall be free of frost before concrete placing begins.
2. Slabs where vapor barrier required
- a. Provide vapor barrier for all interior slabs on grade except for pipe and duct and crawl spaces.
 - b. Install vapor barrier in accordance with manufacturer's instructions and ASTM E1643. Just prior to concrete placement, check vapor barrier for punctures and repair as specified below.
 - 1) Unroll vapor barrier with the longest dimension parallel to the direction of pour.
 - 2) Lap barrier over footings and seal to foundation walls.
 - 3) Overlap joints 6" and seal with pressure sensitive tape.
 - 4) Seal all penetrations with pipe boots.
 - 5) No penetration of the barrier is allowed except for reinforcing steel and permanent utilities.
 - 6) Repair damaged areas by cutting patches of vapor barrier, overlapping damaged areas 6", and taping all four sides with pressure sensitive tape.
 - c. Pour slab to required thickness after installation of reinforcement.

3.08 MISCELLANEOUS CONCRETE WORK

- A. Provide motor, blower, and other mechanical bases. Coordinate with the work of Division 23 and 26. Provide concrete bases as shown on Drawings.

3.09 PATCHING AND BONDING TO EXISTING CONCRETE

- A. Provide bonding agent whenever new concrete is to be poured against existing concrete, whenever the time between concrete pours is longer than that allowed for proper bond, and wherever bonding agent is indicated on the Drawings to be applied.
- B. Remove loose concrete from surface to be bonded with new concrete and clean. Remove rust from reinforcement

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and structural steel by power chipping and power driven brushes.

- C. Apply bonding agent in accordance with manufacturer's specifications. Pour concrete as soon as bonding agent has cured and within 20 hours after application. If the 20-hour period has elapsed, then the bonding agent must be reapplied.

3.10 CURING AND PROTECTION

A. General

- 1. Begin curing concrete immediately after placement and finishing. Protect all freshly deposited concrete from premature drying and excessively hot or cold temperatures and maintain it with minimal moisture loss at a relatively constant temperature for the period of time necessary for the hydration of the cement and proper hardening of the concrete. Detailed procedures are given in ACI 308 and Section BC 1905.11 of the 2008 NYC Building Code.
- 2. Cure floor surfaces in accordance with ACI 308.
- 3. Do not apply curing compounds to surfaces receiving waterproofing, adhesives, membranes or additional concrete unless approved by adhesive or material manufacturer or compound is removed in an approved manner. As an alternate, provide wet curing.

B. Procedure

- 1. Concrete surfaces not in contact with forms:
 - a. Ponding or continuous non-manual sprinkling.
 - b. Absorptive mat or fabric, sand, or other covering kept continuously wet.
 - c. Curing compounds conforming to ASTM C1315 or strippable curing compound conforming to ASTM C309.
- 2. Concrete surfaces in contact with forms:
 - a. Minimize moisture loss from forms exposed to heating by the sun by keeping forms wet until they are removed.
 - b. After form removal, cure with one of the methods listed in 1 above.
- 3. Continue curing until a total of 7 days has elapsed during which the temperature of the air in contact with concrete has remained above 50°F. Prevent rapid drying during and at the end of the curing period.

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4. Remove all curing compounds with cleaners recommended by curing compound manufacturer.

C. Cold Weather Curing

Concrete must be protected from water loss. This shall be accomplished by the application as soon as possible without harm to the concrete surfaces of either (a) exhaust steam, or vapor-resistant paper or polyethylene film, or (b) curing compounds. In all other respects, curing shall conform to applicable provisions of this Section. Concrete temperature shall be maintained between 50°F and 70°F.

D. Hot Weather Curing

1. During the period June 1 to October 1 or when hot weather conditions require it, maintain continuous water curing for a minimum period of twenty-four hours. Provide for windbreaks, shading, and other necessary provisions.
2. After 24 hours, curing shall be by one of the methods specified under B above. In all other respects, curing shall conform to applicable provisions of this Specification. Upon termination of the specified moist curing, every effort should be made to reduce the rate of drying by avoiding air circulation.

- E. Protection from mechanical injury:** Protect concrete from mechanical disturbances during curing period as described under "Protection and Cleaning".

3.11 FIELD QUALITY CONTROL

A. Tests

Tests to be performed by the Testing Laboratory during construction are as follows:

1. Compliance of materials to Specifications tested from production samples.
2. Determination of the slump of the concrete for each sample taken and whenever consistency of the concrete appears to vary using ASTM C143. The Special Inspector will reject any concrete that does not meet the slump requirements.
3. Determination of water content of freshly mixed normal weight concrete utilizing the procedure of AASHTO T318. Concrete that does not meet the maximum water to cement ratio or the proportions given in the approved design mix will be immediately rejected regardless of slump.

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4. Strength tests on the specimens in accordance with ASTM C39:
 - a. The frequency of conducting strength tests of concrete shall be in accordance with Section BC 1905.6.2 of the 2008 NYC Building Code, with additional cylinders taken for an additional strength test and one cylinder for a 7-day break. Strength tests shall be performed for each 50 cubic yards, or portions thereof, of concrete placed in any one day's concreting. Specimens will be stored at the site in the insulated curing box provided by the Contractor. Each group of specimens is considered one strength test. One cylinder will be broken at 7 days for information.
 - 1) Portland cement concrete: A strength test shall be performed at 28 days for acceptance. The remaining cylinders for the additional strength test will be tested only if the 28-day breaks are low or durability of the concrete is in question.
 - b. If one specimen in a test manifests evidence of improper sampling, molding, or testing, it shall be discarded and the average strength of the remaining cylinders shall be considered the test result. Should all specimens in a test show any of the above defects, the entire test shall be discarded.
5. Determination of air content and unit weight of normal weight concrete sample for each strength test in accordance with ASTM C173 or C231 and ASTM C138.
6. Determination of air content and unit weight of lightweight concrete sample for each strength test in accordance with ASTM C173 or C231 and ASTM C567.
7. Determination of temperature of concrete sample for each strength test.

B. Inspection

1. Refer to "Source Quality Control" for responsibility and procedure.
2. The Contractor shall cooperate in the making of all tests by the Laboratory Technician by:
 - a. Providing a well-constructed shanty, to be approved by the Commissioner. This shanty

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shall have an area of not less than 50 sq ft, be well lighted, and provided with a table for mixing concrete, shelves for storage of the Laboratory's equipment, molds, etc., one chair, hinged door with suitable lock.

- b. Providing an insulated curing box of sufficient size and strength to contain all specimens made in any four consecutive working days. The Contractor shall furnish an outlet to provide the necessary temperature in the storage box, pending delivery to the Laboratory of the test cylinders.
- c. Providing a buggy for transporting the concrete taken from the mixer (and/or point of placement) to the shanty for testing and the preparation of specimens.
- d. Protecting the property of the Laboratory to be stored in the shanty and keeping test specimens free from vibration and other disturbances.
- e. Providing a microwave of the size specified in AASHTO T318 and a portable generator.

C. Evaluation and Acceptance of Concrete

1. Strength tests on structural concrete will be evaluated according to Section BC 1905.6.3.3 of the 2008 NYC Building Code.
2. When the average strength of the test cylinders, as defined in Section BC 1905.6.3.3 falls consistently below the specified strength ($f'c$), the Commissioner shall have the right to order the Contractor to change the proportions or the water content of the concrete to secure the required strength for the remaining portion of the structure, all at the Contractor's expense. It is the Contractor's complete responsibility to modify the concrete mix design, material controls, and/or concrete operations where necessary to obtain the compressive strength required by the design and Specification.
3. When the average strength of test cylinders for any portion of the structure is less than that required by the design or Specification, or where there is other evidence that the quality of the concrete is below Specification requirements, the adequacy of the concrete will be checked according to the requirements of Section BC 1906.6 either by structural analysis or by core or load tests or by any combination of these procedures. The

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Commissioner will determine which procedures to use:

- a. Structural Analysis Computations (Section BC 1905.6.5.5), which will be performed by the Commissioner.
 - b. Core Tests (Section BC 1905.6.5.2) - Performed in accordance with ASTM C42.
 - c. Load Tests (AC1318 Paragraph 20.3 or Section BC 1713 of the Building Code).
4. Exterior concrete exposed to the elements with low strength test results or other evidence of poor durability will be rejected.
 5. Low Strength Tests of Concrete or evidence of poor durability - Results
 - a. Pay for additional costs of labor and materials required at the job for all damages resulting from load tests and the taking of cores. Remove and replace concrete work that is not of adequate strength or durability and cannot be made to work by remedial methods acceptable to the Commissioner at own cost. The Contractor shall be held responsible for all delays and damages to the work of other Divisions that occur as a result of non-conformance.

3.12 PROTECTION AND CLEANING

A. General.

During the curing period, and thereafter as conditions may require, protect the concrete from damaging mechanical disturbances, particularly excessive load stresses, heavy shock, and excess vibration. Protect all finished concrete surfaces from damage caused by construction equipment, materials or methods, and by rain or running water. Self-supporting structures shall not be loaded in such a way as to overstress the concrete.

B. Floors

Floors that have received their final finish shall be closed to all traffic for at least 48 hours following the completion of troweling. Avoid damage to the floor and repair, clean, and prep floor for finishes.

3.13 ACCEPTANCE OF CONCRETE WORK

A. General

1. Completed concrete work that meets all applicable requirements will be accepted without qualification.
2. Completed concrete work which fails to meet one or more requirements but which has been repaired to bring it into compliance will be accepted without qualification.
3. Completed concrete work which fails to meet one or more requirements and which cannot be brought into compliance may be accepted or rejected as provided in these Specifications or in the Contract Documents. In this event, modifications may be required to assure that remaining work complies with the requirements.
4. Concrete work judged inadequate by structural analysis, core test, results of load test or deemed unacceptable due to appearance or durability concerns shall be repaired, reinforced with additional construction if so directed by the Commissioner, or be replaced if so directed by the Engineer at the Contractor's expense.
5. Pay all costs incurred by the Commissioner in providing additional testing and/or analysis required by this Section.
6. The Commissioner will pay all costs of additional testing and analysis made at its own request that is not required by this Section or that shows concrete is in compliance with the Contract Documents.

B. Appearance

1. Concrete exposed to view with defects that adversely affect the appearance of the specified finish may be repaired only by approved methods.
2. Concrete not exposed to view is not subject to rejection for defective appearance.

C. Strength of Structure

1. The strength of the structure in place will be considered potentially deficient if it fails to comply with any requirements that control the strength of the structure, including but not necessarily limited to the following conditions:
 - a. Low concrete strength as described under "Field Quality Control".

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- b. Reinforcing steel size, quantity, strength, position, or arrangement at variance with the requirements of the Contract Documents.
 - c. Concrete that differs from the required dimensions or location in such a manner as to reduce the strength.
 - d. Curing less than that specified.
 - e. Inadequate protection of concrete from extremes of temperature during early stages of hardening and strength development.
 - f. Mechanical injury as defined under "Protection and Cleaning", construction fires, accidents, or premature removal of formwork likely to result in deficient strength.
- 2. Structural analysis and/or additional testing may be required when the strength of the structure is considered potentially deficient.
 - 3. Core tests may be required when the strength of the concrete in place is considered potentially deficient.
 - 4. If core tests are inconclusive or impractical to obtain or if structural analysis does not confirm the safety of the structure, load tests may be required and their results evaluated in accordance with Chapter 20 of ACI 318.

END OF SECTION

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SECTION 042000
UNIT MASONRY

PART 1 GENERAL

1.01 SUBMITTALS

- A. Product Data:
1. Mortar:
 - a. Portland Cement: Brand and manufacturer's name.
 - b. Masonry Cement: Brand and manufacturer's name.
 - c. Lime: Brand and manufacturer's name.
 - d. Sand: Location of pit, name of owner, and previous test data.
 - e. Color Pigments: Brand and manufacturer's name.
 2. Masonry Wall Reinforcement: Catalog sheets and specifications.
- B. Samples:
1. Concrete Masonry Units: 6, each size.
 2. Masonry Wall Reinforcement: 24 inch long sections.
- C. Quality Control Submittals:
1. Test Reports:
 - a. Concrete Masonry Units: Submit certified test reports for each size showing that units for delivery to the Project meet the requirements of these Specifications.

1.02 PROJECT CONDITIONS

- A. Environmental Requirements:
1. Protect masonry and materials against freezing at temperatures below 40 degrees F.
 2. Do not use frozen materials or materials coated with ice or frost.
 3. Do not lower freezing point of mortar by use of antifreeze agents or other admixtures. Do not use calcium chloride in mortar.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

- A. Hollow Load-Bearing Units: ASTM C 90, Type I.

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- B. Fire Rated Units: Aggregate type and equivalent solid thickness as required to obtain the fire resistance rating indicated. Fire resistance ratings shall be based on fire tests in accordance with ASTM E 119.
- C. Aggregate:
 - 1. Lightweight Units: ASTM C 331; dry net weight not more than 105 lb per cu ft.
 - 2. Normal Weight Units: ASTM C 33; dry net weight not less than 125 lb per cu ft.
- D. Special Shapes: Units of shape and size required for lintels, corners, jambs, sash, control joints, headers, bonding, and other special conditions indicated.
 - 1. Outside Corners: Square edge units.
 - 1. Outside Corners: Bullnose units.

2.02 MORTAR AND MASONRY GROUT

- A. Mortar: ASTM C 270, proportion specifications. Types as follows:
 - 1. Type M for unit masonry below grade in contact with fill materials.
 - 2. Type S for concrete masonry units.
 - 3. Type N for brick masonry units.
 - a. Proportion Portland cement, lime, and sand in a 1:1:6 ratio.
- B. Color Pigments: High purity, finely ground, chemically inert, unfading, lime proof mineral oxides specially prepared for use in mortar.
 - 1. Proportion color pigments with other ingredients in mortar as necessary to match color of existing adjacent mortar joints.
- C. Grout: ASTM C 476, fine or coarse as most suitable for the particular job conditions.

2.03 ACCESSORIES

- A. Masonry Wall Reinforcement: Joint reinforcement factory fabricated from cold-drawn steel wire, truss or ladder design, 9 gage deformed steel wire longitudinal rods welded to 9 gage steel wire cross ties spaced 16 inches on center; width 1-1/2 to 2 inches less than wall thickness. Furnish factory-fabricated corner and tee sections for corners and wall intersections.
 - 1. Finish for Exterior Walls: 1.5 oz per sq ft hot dipped galvanized after fabrication.
 - 2. Finish for Interior Walls: 0.8 oz per sq ft mill galvanized.

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3. Cavity Wall Construction: Ladder design fabricated with drip notch in cross ties centered over the cavity.
 4. For walls with concrete masonry unit back-up wythe, reinforcement shall have a third longitudinal rod located for proper embedment at internal face shell of concrete masonry units.
 5. Provide units with adjustable 2-piece rectangular ties where horizontal joints of facing wythe do not align with those of back-up.
- B. Bar Reinforcement: ASTM A 615, Grade 60, deformed steel bars.
1. Rebar Positioner: Fabricate from galvanized steel wire, 9 gage or 6.5 gage as required. Design to fit concrete masonry units, and number, size and location of rebars indicated. Products; Steel-Wich Telescoping Rebar Positioner™, P. O. Box 1936, Buffalo, NY 14240, (716) 683-7526; or No. 376, 377 by Heckmann Accessories, 4015 West Carroll Avenue, Chicago, IL 60624, (800) 621-4140.
- C. Buck Anchors (For Anchoring New Masonry To Existing Construction): 1-1/4 x 1/8 x 8 inch long Z type steel buck anchor with 2 inch long right angle bent ends, bolt hole in one bent end, 1.5 oz per sq ft hot dipped galvanized after fabrication. Furnish 3/8 inch diameter galvanized machine bolt and nonferrous metal expansion shield.
- D. Continuous Steel Angle (For Anchoring New Masonry to Existing Masonry): Continuous galvanized steel angles of sizes indicated with holes spaced 18 inches on center. Furnish galvanized steel anchors of sizes and types indicated or required.
- E. Masonry Veneer Anchors: Corrugated wall ties, 22 gage steel, 7/8 inch wide, 7 inches long, 1.5 oz per sq ft hot dipped galvanized after fabrication.
- F. Flexible Anchors: 1.5 oz per sq ft hot dipped galvanized steel anchors which will permit horizontal and vertical movement of masonry but will maintain lateral restraint, and as follows:
1. For Anchorage To Concrete Framework: 2 piece anchors with 12 gage sheet steel dovetail section and rectangular or vee-shaped 3/16 inch diameter wire tie section sized to extend to within one inch of face of masonry.
 2. For Anchorage To Steel Framework: 2 piece anchors with crimped 1/4 inch diameter bar for welding to

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steel and rectangular or vee-shaped 3/16 inch diameter wire tie section sized to extend to within one inch of face of masonry.

- G. Dovetail Anchor Slot Concrete Inserts: 24 gage galvanized steel, with filler strip; slot sized to fit dovetail anchor.
- H. Unit-Type Concrete Inserts: Cast iron or malleable iron, or fabricated 12 gage steel with 1.5 oz per sq ft hot-dip zinc coating.
- I. Masonry Wall Ties: 3/16 inch diameter cold-drawn steel wire, with 1.5 oz per sq ft hot-dip zinc coating after fabrication; Z-shaped for solid unit masonry, rectangular shape for hollow unit masonry; 2 piece adjustable type where wythe courses are not aligned.
- J. Tiebars: 1-1/4 x 1/4 x 28 inch long steel bars with 3 inch long right angle bent ends, 1.5 oz per sq ft hot dipped galvanized after fabrication. Adjust length of bars as required when obstructions are encountered.
- K. Metal Lath: Galvanized, expanded metal lath weighing not less than 3.4 pounds per square yard.
- L. Hardware Cloth: 16 gage, 1/2 inch square mesh, galvanized steel wire mesh.
- M. Premolded Control Joint Strips: Solid rubber strips of profile indicated (to maintain lateral stability of wall); 60-80 Shore A durometer hardness.

2.04 SOURCE QUALITY CONTROL

- A. Tests:
 - 1. Test concrete masonry units in accordance with ASTM C 140 and ASTM C 426.
 - 2. Have tests performed by a qualified independent testing laboratory.

PART 3 EXECUTION

3.01 PREPARATION

- A. Lay out walls and partitions with one course of unit masonry, or other suitable means, to define the spaces, locations of doors and other openings, and to serve as a guide for other trades in the installation of conduits, pipes, etc.

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- B. Allow other trades sufficient opportunity to install built-in work before proceeding with the walls and partitions. Do not cover pipes, conduit, or ductwork in masonry until directed by the Commissioner.
- C. Wet brick that absorb 20 drops of water (placed in a one inch circle) in less than 90 seconds.
- D. Clean off supporting surface under first course of masonry just prior to laying the masonry units.
- E. Protection:
 - 1. Protect face materials against staining.
 - 2. Protect newly laid masonry from exposure to precipitation, excessive drying, freezing, soiling, backfill, and other harmful elements.
 - 3. Cover top of walls with non-staining waterproof covering when Work is not in progress. Place with minimum 2 foot overhang of protective covering on each side of wall and securely anchor.

3.02 INSTALLATION

- A. Install masonry units plumb and true to line with level courses accurately spaced.
 - 1. Install masonry units in running bond unless otherwise indicated.
 - 2. Take special care when laying masonry units to be left exposed, or upon which high-build glazed coating, paint, or thin set tile will be applied. Surface plane tolerance for such Work: 1/8 inch in 10 feet in all directions.
- B. Adjust units to final position while mortar is soft and plastic. Remove units disturbed after mortar has stiffened; clean units and joints of mortar and re-lay in fresh mortar.
- C. Lay only dry concrete masonry units.
- D. Where cutting of masonry units is necessary, cut with a power saw. Lay out Work to avoid use of less than half-size units.
- E. Lay hollow units with full mortar coverage on horizontal and vertical face shell surfaces. Bed webs in mortar in starting course on footings and foundation walls, in all courses of piers, columns and pilasters, where adjacent to cells or cavities to be reinforced or filled with concrete or mortar, and within 1'-6" of each side of openings.

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- F. Collar Joints: Except in cavity walls, fill vertical-longitudinal joint between wythes by slushing and rodding the joint full of mortar.

3.03 JOINTS

- A. Construct uniform mortar joints, 3/8 inch thick unless otherwise indicated.
- B. Strike joints flush in surfaces to be plastered, stuccoed, or covered with other masonry or other surface applied finish other than smear and high-build glazed coating.
- C. Cut joints flush and tool slightly concave on both sides of other walls and partitions, including inner wythe of exterior cavity walls.

3.04 HORIZONTAL JOINT REINFORCEMENT

- A. Reinforce horizontal joints with continuous masonry wall reinforcement spaced every 16 inches vertically except as follows:
 - 1. Space 8 inches vertically in parapet walls.
 - 2. Also reinforce horizontal joints immediately above and below openings for a distance of 2'-0" beyond opening in both directions.
- B. Do not bridge control joints or expansion joints with reinforcement.
- C. Lap ends of adjoining strips of reinforcement 6 inches or more.
- D. Install factory fabricated corner and tee sections at corners and wall intersections respectively.

3.05 TYING ADJACENT WYTHES

- A. Tie adjacent wythes of masonry walls together with continuous masonry wall reinforcement spaced vertically not more than 16 inches on center. Install reinforcement as specified under HORIZONTAL JOINT REINFORCEMENT.
- A. Tie adjacent wythes of masonry walls together with masonry wall ties spaced 16 inches vertically and 24 inches horizontally.

3.06 BONDING WITH MASONRY

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- A. Lay masonry units in masonry bond for the following:
1. External corners of partitions and walls.
 2. Pilasters, piers, and columns.
 3. Intersections of walls and partitions with a door opening within one foot of intersection. Fill cells between the intersection and the door frame with mortar to the full height of the door.

3.07 ANCHORING

- A. Anchor walls adjoining or intersecting structural framing, and dependent upon structural framing for lateral support, to structural members with flexible anchors secured to structural members.
1. Space flexible anchors 16 inches on center, unless otherwise shown on the Drawings.

3.08 CONTROL AND EXPANSION JOINTS

- A. Install control and expansion joints at locations indicated. Keep joints free of mortar and debris.

3.09 BUILT-IN WORK

- A. Avoid cutting and patching.
- B. Build-in bolts, anchors, nailing blocks, inserts, frames, vents, flashings, conduit and other items as masonry work progresses.
- C. Fit masonry units closely around built-in items. Fill voids around built-in items with mortar for anchorage. Solidly fill space between masonry and metal frames with mortar.
- D. Unless otherwise shown on the Drawings, construct 1/4 inch to 3/8 inch wide open joint around outside perimeter of exterior door and window frames and other framed exterior wall openings to receive sealant. Rake joints and tool smooth to a uniform depth of 1/4 inch.
- E. Flashings: Clean contact surfaces and remove projections which might puncture the flashing. Place flashing on bed of mortar and cover with mortar. Seal joints with joint sealant.

3.10 LINTELS

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- A. Install lintels over openings in masonry. Center lintel over opening. Set in full bed of mortar under each end.

3.11 CLEANING

- A. Cut off mortar projections remaining from tooling joints and dry-brush masonry before the end of each day's work.
- B. Additional Cleaning for Brickwork:
 - 1. Clean with stiff brushes and water.
 - 2. If staining or soiling persists, reclean with stiff brushes and a solution of trisodium phosphate, detergent, and water (1/2 cup of trisodium phosphate and 1/2 cup of detergent to each gallon of water). Rinse with clean water.
 - 3. If the above methods are unsuccessful, as judged by the Commissioner, reclean with an approved (determined by a sample area test) liquid masonry cleaning agent in accordance with the manufacturer's instructions.

3.12 SCHEDULE FOR CONCRETE MASONRY UNITS

- A. Unless shown otherwise on the Drawings, use the various kinds of concrete masonry units specified at the locations indicated below:
 - 1. Hollow Load-Bearing Units (Normal Weight):
 - a. Use for exposed exterior Work.
 - b. Use for Work in which the same masonry units are exposed on both the interior and exterior.

END OF SECTION

SECTION 05 12 00
STRUCTURAL STEEL

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Furnish and erect all structural steel as shown on Drawings.
- B. Provide shop painting and galvanizing as specified.

1.02 RELATED SECTIONS

- A. Metal Deck.....Section 05 30 00
- B. Metal Fabrications.....Section 05 50 00

1.03 REFERENCES

References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

- A. American Society of Testing and Materials (ASTM) standards, latest editions.
- B. "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings" 9th edition, including supplements. (AISC 335).
- C. American Welding Society (AWS) standards for procedures and materials.
- D. "Code of Standard Practice for Steel Buildings and Bridges" (AISC 303)
- E. Steel Structures Painting Council (SSPC) standards.

1.04 DEFINITIONS

- A. Structural Steel

Structural Steel consists of the steel elements of the structural steel frame essential to support the design loads. These elements consist of material as shown on the structural steel plan and listed in Article 2.1 of the AISC "Code of Standard Practice for Steel Buildings and Bridges."

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1.05 SUBMITTALS

A. Shop Drawings

1. Failure to submit legible shop drawings will be cause for return without review.
2. Provide a set of shop drawings showing all connections, bolting, welding, and size of material. Shop drawing shall show intended method of reinforcing existing members and making connections to existing steel as developed by the detailer based on conditions and actual dimensions.
3. Do not order steel in advance of approval of shop drawings, except at own risk.
4. Shop drawings shall be prepared under supervision of and bear the seal of a Professional Engineer licensed in the State of New York. Connections not designed on the Drawings shall be done by the detailer's licensed Engineer. Do not submit unchecked shop drawings. After final approval of all shop drawings, submit a final set sealed and signed by the Professional Engineer.
5. Shop drawings will be checked for size of material and strength of connection by the Engineer of Record, which shall not render the Engineer of Record responsible for any errors in construction dimensions, etc. that have been made in preparation of shop drawings. The Contractor shall assume full responsibility for the correctness of dimensions and fit.
6. Calculations shall be submitted upon request.
7. After shop drawings are 100% complete and approved and all field changes have been made, submit a set of as-built drawings to the Commissioner.

B. Quality Control Submittals

1. Certificates and Affidavits
 - a. Furnish notarized Building Department affidavit from steel manufacturer (Form SS24) certifying materials conform to Specification requirements and material was erected as designed.
 - b. Furnish bolt manufacturer's test reports, covering physical and chemical tests, for each lot of high strength bolts submitted.
 - c. Furnish steel manufacturer's certificate certifying welders employed on the Work have met AWS qualifications within the previous twelve months, and for work performed in the

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field are NYC licensed welders as per §28-407.1 of the Administrative Code.

- d. Furnish complete listing of ASTM's of materials listed in Part 2 of this Section and certification that materials supplied meet those listed.

2. Contractor Qualifications

Provide proof of Fabricator and Erector qualifications specified under "Quality Assurance".

1.06 QUALITY ASSURANCE

A. Qualifications

1. Fabricator: Company specializing in the fabrication of steel products to be used in the Contract shall have a minimum of three years experience.
2. Erector: Company specializing in performing the Work of this Section shall have a minimum of three years experience and have done projects with similar quantity of material.

B. Regulatory Requirements

1. Building Code: Work of this Section shall conform to all requirements of the NYC Building Code and all applicable regulations of governmental authorities having jurisdiction, including safety, health, noise, and anti-pollution regulations. Where more severe requirements than those contained in the Building Code are given in this Section, the requirements of this Section shall govern.
2. New York City Board of Standards and Appeals (BSA): Rules for Arc and Gas Welding and Oxygen Cutting and Steel Covering the Specifications for Design, Fabrication, and Inspection of Arc and Gas Welded Steel Structures and Qualification of Welders and Supervisors.
3. Industry Standards: Standards specified in Article 1.03 apply to Work of this Section. Where more severe requirements than those contained in the Standards are given in this Section or the Building Code, requirements of this Section or the Building Code shall govern.
4. Recommendations or suggestions in the codes and references listed in this Article and under "References" shall be deemed to be mandatory unless they are in violation of the Building Code.

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C. **Certifications**

1. Structural steel shall conform to the material acceptance, certification, and inspection requirements of Section BC 1701 of the 2008 NYC Building Code.
2. Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure".

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to the site at such intervals as to insure uninterrupted progress of Work.
- B. Deliver anchor bolts and other anchorage devices, which are to be embedded in cast-in-place concrete or masonry, in ample time so as not to delay Work.
- C. Store materials to permit easy access for inspection and identification. Store material of the ground and protect from the weather and contamination.

1.08 FIELD MEASUREMENTS

- A. Take field measurements as required by Drawings. Where possible, take field measurements of existing conditions prior to fabrication. Verify that field measurements are the same as those shown on Drawings and shop drawings. Report all deviations to the Commissioner in writing.

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PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Fasteners

1. Hilti, Inc.
2. ITW Ramset/Redhead, Inc.
3. Simpson Strong-Tie Anchor System
4. Powers Fasteners

2.02 MATERIAL

A. Structural Steel Shapes, Shims, Plates, and Bars

Structural steel shall conform to the provisions of ASTM A36 or ASTM A992, and pipe steel to the provisions of ASTM A501 unless otherwise noted.

B. Bolts

1. Anchor Bolts: Shall conform to the provisions of ASTM F1554, Grade 36, unless different grade is specified elsewhere. Size and detailing indicated on Drawings.
2. High-Strength Bolts: Shall conform to the requirements of ASTM A325.
3. Provide types as indicated on Drawings. The anchor specified shall be considered the basis of design. As a minimum, all anchors exposed to weather or embedded in masonry are to be Type 316 stainless steel. Anchors shall ICC certified for cracked concrete as per BC 1913 of the 2008 NYC Building Code.

C. Hardware

1. Nuts for anchor bolts shall conform to the requirements of ASTM A563.
2. Nuts for high-strength bolts shall conform to the provisions of ASTM A194 or ASTM A563 as specified in ASTM A325.
3. Washers shall conform to the provisions of ASTM F436.

D. Filler Metal for Welding

1. Welding electrode shall conform to E70XX classification of AWS A5.1 for welding of new steel to new steel.
2. Welding electrode shall be compatible with existing steel where connections are made to steel of existing building. Electrode shall be E7018 unless determined otherwise. E7018 are low

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hydrogen electrodes that must be kept extremely dry.

E. Structural Steel Primer Paint

Provide type of primer indicated on steel under the following application conditions.

1. Interior application: Modified alkyd rust-inhibitive type containing no lead equal to Tnemec Co. No. 10-99 or Carboline Carbocoat 115-SG. Red oxide paint is not acceptable.
2. Primer for galvanized steel to be painted: Epoxy paint equal to Tnemec Co. Series FC27 Typoxy or Carboline Carboguard 888.
3. Steel embedded in exterior masonry wall and exterior application: High adhesion high-solids epoxy coating equal to Tnemec Co. Series 135 Chembuild or Carboline Carboguard 890. This paint shall also be used on the existing steel exposed by masonry removals and wherever else existing steel is to be painted. Top coats for exposed steel is to be the epoxy coat system given in Section 099000.

F. Galvanizing by the Hot-dip Method

1. Galvanize structural shapes in accordance with ASTM A123.
2. Galvanize hardware in accordance with ASTM A153.
3. Galvanizing repair paint for regalvanizing welds and damaged areas shall conform to ASTM A780 and comply with Military Specification MIL-P-21035, such as ZRC Cold Galvanizing Compound.

2.03 SHOP ASSEMBLY - FABRICATION

A. General

1. Do not fabricate until shop drawings have been reviewed.
2. Fabricate and assemble steel in shop to greatest extent possible. Fabricate items and assemblies in accordance with AISC Specifications and the shop drawings. Properly mark members for field assembly.

B. Shop Connections

1. Weld or high-strength bolt shop connections as indicated on Drawings.
2. High-strength bolt connections are friction (slip-critical) connections. Install high-strength bolts in accordance with "Specification for Structural Joints using ASTM A325 or A490 Bolts" (RCRBSJ).

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3. Welding: Comply with "Structural Welding Code" for procedures, appearance, and quality of welds and methods used in correcting welded work.
4. Holes for other Work
 - a. Provide holes and openings required for securing other Work to steel framing and for passage of other Work through framing members. Coordinate with Drawings of other Work.
 - b. Cut, drill, flame cut, or punch holes perpendicular to metal surfaces. Method of cutting must not produce a roughness of over 1000 microinches. Surfaces exceeding these limits must be repaired by machine grinding. Reinforce all openings with steel shapes as shown on shop drawings.

2.04 SHOP PAINTING

A. General

Apply one shop coat of primer paint on structural steel except as follows:

1. Steelwork or portions of such to receive sprayed fireproofing. Steel that is exposed to the cavity and within the block back-up is to be painted, unless indicated to be galvanized.
2. Top flanges of structural steel members requiring stud shear connectors or supporting metal deck.
3. Contact surfaces of structural steel that are to be bolted or welded together and surfaces within 2" of field welds.
4. Steel members, hardware, and miscellaneous pieces to be galvanized and not specified or indicated to be painted.

B. Cleaning and Surface Preparation

1. Clean all steel first in accordance with SSPC-SP1.
2. Clean steel work not to be painted (except steel work to be galvanized) in accordance with SSPC-SP2.
3. Clean new steel work to be painted within the same day as it will be applied and in accordance with SSPC-SP3 for interior steel and SSPC-SP6 for exterior steel.

C. Shop Coat

1. Apply structural steel primer paint for interior application at a rate to provide dry film thickness of 2.0 to 3.5 mils. Apply primer paint for embedded in exterior masonry wall and exterior

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application at a rate to provide dry film thickness of 7.0 to 9.0 mils. Provide full coverage of joints, corners, edges, and exposed surfaces. Apply to dry surfaces only, when surface temperatures are above dew-point, by brush, spray, or roller, thoroughly and evenly, in strict accord with manufacturer's instructions for every detail of handling.

2. Apply second coat of the approved primer, in a darker shade, to surfaces inaccessible to painting after assembly or erection.
3. Protect machined surfaces with an approved rust-inhibiting coating that is readily removable prior to erection.

2.05 GALVANIZING

A. General

Galvanize all steel exposed to the weather and other members designated on Drawings to receive it. Galvanize all lintels, attachment clips, and hardware.

B. Cleaning and Surface Preparation

1. Hardware (bolts, nuts, etc.): Clean and leave free of mill scale before galvanizing.
2. Clean all steel first in accordance with SSPC-SP1 if needed.
3. Steel members: Clean in accordance with SSPC-SP8 before hot-dip galvanizing.
4. Steel members: Clean in accordance with SSPC-SP10 before zinc metallizing. Surface shall have a 3-4 mil anchor pattern. Moisture cannot be present on steel and temperature cannot be less than 5°F above the dew point. Thermal spray must be applied within 4 hours of blasting.

C. Shop Coat - Hot-dip Galvanizing - Provide for items not to have finish paint coat.

1. Galvanize hardware in accordance with ASTM A153.
2. Galvanize steel shapes in accordance with ASTM A123. Apply zinc coating as per Thickness Grade specified in ASTM A123.

2.06 SOURCE QUALITY CONTROL

A. Testing

1. General

- a. Structural steel work is subject to all tests required by the Special Inspection requirements of the 2008 NYC Building Code.

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- b. Cooperate with the Testing Laboratory in making all required tests.
- 2. Tests: To be performed by the Testing Laboratory.
 - a. Shop bolted connections: Tested in accordance with AISC specifications.
 - b. Shop welding - The laboratory will perform the following functions:
 - 1) Certify welders.
 - 2) Visually inspect all welds, record type and locations of defects, and perform tests if necessary. Check all corrected work.
 - 3) Perform non-destructive tests if necessary or as required by the Special Inspector.

B. Inspection

- 1. Testing Laboratory
 - a. A Testing Laboratory or Special Inspection Agency will assist in the inspection of steel fabrication and conduct tests at the mill, shop, or foundry. The laboratory will assist in checking erection tolerances and provide shop and field testing required for all structural steel and metal deck work, including metal deck and studs.
 - b. The Testing Laboratory will be responsible to and under the supervision of a Special Inspector.
- 2. Special Inspector

The Commissioner will assign, under the requirements of Section BC 1704.3 of the 2008 NYC Building Code, a Special Inspector to supervise the Work listed above under "Testing Laboratory".
- 3. Notification: Notify the Commissioner before beginning fabrication of the structural steel and supply laboratory with copies of agreements, approved drawings, approved prints of all shop details, etc., and all necessary information relating thereto. Do not ship material to job site until after inspection and approval by the Testing Laboratory.
- 4. Discretionary Inspections: No mill, shop, foundry, or field inspection, such as is above provided for, shall be held to prohibit or preclude inspection of such materials during delivery and erection at the building by such other persons as the Commissioner shall direct.
- 5. Reports: Shop and field reports, including shipments, will be submitted by the Testing

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Laboratory to the Commissioner as the work proceeds at the shop or job site. A final report will be submitted by the Testing Laboratory when work is completed at the shop, and again when work is completed in the field. The Special Inspector reserves right to reject material not in compliance with specified requirements at any time.

6. Corrections: Correct deficiencies in work which inspections and tests have indicated to not be in compliance with requirements. Pay for additional tests, at own expense, necessary to reconfirm any non-compliance of original work and as necessary to show compliance of corrected work.
7. Contractor's Responsibility: Inspection and acceptance or failure to inspect shall in no way relieve the Contractor or the mill and shops from their responsibility to furnish satisfactory material strictly in accordance with Drawings and Specifications.

PART 3 - EXECUTION

3.01 FIELD PROBES AND VERIFICATION OF EXISTING STRUCTURAL MEMBERS

- A. Conduct a condition survey of the building structure as specified on construction drawings and as indicated herein.
- B. Applications
 1. Structures where there is doubt as to structural adequacy with regard to future loading when the original design criteria are not known.
- C. Categories of evaluation
 1. Stability of entire structure.
 2. Stability of individual components of the structure.
 3. Strength and safety of individual structural elements.
- D. Survey methods for evaluation
 1. Visual examination.
 2. In-place tests for assessing the thickness and strength of concrete.
- E. Supervision
 1. All survey work shall be done in strict supervision of the Commissioner.

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F. Report

1. All findings shall be reported to the Commissioner.

3.02 EXAMINATION

- A. Verify that field conditions are acceptable and that erection may proceed. Notify the Commissioner in writing of conditions that adversely affect the Work. Do not proceed with erection until conditions have been corrected. Beginning of installation means the erector accepts existing conditions.

3.03 ERECTION

A. General

1. Erection shall conform to Section BC 2205.6.4 of the 2008 NYC Building Code and Section 1.25 of AISC 335.
2. All work shall be erected plumb, square, and true to lines and levels in strict accordance with the structural requirements of the building.
3. Provide all machinery, apparatus, and staging required for the erection of steel work in a thoroughly safe and efficient manner. Install, maintain and remove, without injury to other Work, such temporary bracing, scaffolding, etc. as may be necessary or required. Care shall be taken that no part of the structure is overloaded during construction.
4. Arrange for deliveries of material to facilitate the rapid and continuous progress of operation, but the site or streets adjacent to same shall not be used for the storage of material unless absolutely necessary and then only with special permission of the Commissioner and other authorities having jurisdiction.
5. Employ a Licensed Professional Engineer to ensure accurate erection of the steel.
6. Do not alter or cut structural members without written approval of the Engineer of Record. Flame cutting in field of members to correct fabrication errors is to be avoided and to be done only upon approval of the Engineer of Record based on the method proposed. Roughness cannot exceed 1000 microinches. Repair of surfaces shall be by mechanical grinding.

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B. Temporary Shoring and Bracing

Provide temporary shoring and bracing members with connections of sufficient strength to bear erection loads and guy wires to maintain structure plumb and in true alignment until completion of erection. Remove temporary work when permanent members and bracing are in place and final connections are made. Fill erection bolt-holes on exposed to view members with plug welds and grind smooth.

C. Anchor Bolts

1. Furnish to the concrete masons anchor bolts and other connectors required for securing structural steel to cast-in-place concrete work, together with instructions, templates, etc. necessary for setting them. Anchor bolts are to be surveyed and any approved modifications made prior to placement of columns.
2. For expansion/adhesive anchors used as anchor bolts, drill holes of depth and size required by the manufacturer for the required loading. Have bolt manufacturer perform pullout test to verify capacity prior to final approval.
3. Tighten anchor bolts after support members have been positioned and plumbed. Cut off protruding edges of wedges or shims flush with edge of base or bearing plate prior to packing with grout. Tighten expansion bolts/anchors to torque required by manufacturer.

D. Base Plates

1. Clean concrete and masonry bearing surfaces of loose and bond-reducing materials.
2. Set loose and attached base plates and bearing plates for structural members on shims and other adjusting devices. Plates are to have grout holes, such as leveling plates, within specified tolerances. Elevations of shims and leveling plates shall be surveyed and adjusted to correct elevation prior to placement of column or beam. Plates are to have grout holes.

E. Field Assembly

1. Erect structural frames accurately to lines and elevations indicated. Align and adjust members forming a part of a complete frame or structure before permanently fastening.
2. Clean bearing surfaces and other surfaces that will be in permanent contact before assembly.
3. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

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4. Level and plumb individual members of structure within specified AISC tolerances.
5. Establish required leveling and plumbing measurements on mean operating temperature of structure. Make allowances for difference between temperature at time of erection and mean temperature at which structure will be when completed and in service.
6. Splice members only where indicated and accepted on shop drawings.

F. Connections

1. Field connections between new steel members will typically be bolted unless otherwise indicated on Drawings. Connections made to existing steel shall be welded utilizing E7018 electrode. Follow preheat and interpass temperature requirements given in AWS.
 - a. Provide high-strength bolts for bolted connections except where indicated on the Drawings. High-strength bolt connections are friction (slip-critical) connections. Install high-strength bolts in accordance with "Specification for Structural Joints using ASTM A325 or A490 Bolts."
 - b. For ASTM A307 or A325 bolts, hardened washer shall be installed under the turned element. For ASTM A490 bolts, hardened washer shall be installed under the head and nut.
 - c. Where connections are to be made to the vertical face of existing concrete, drill holes to the proper diameter and depth required for installation of expansion/adhesive anchors and install the anchors as per manufacturer's instructions. Tighten to the torque values specified by the manufacturer. Attach plates flush with concrete surfaces after the surfaces have been cleaned. Have bolt manufacturer perform pullout test to verify capacity and quality of substrate prior to final approval.
2. Holes
 - a. The size of bolt holes shall be in accordance with AISC "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings."
 - b. Ream or broach holes that must be enlarged to admit bolts. Burning or use of drift pins is not permitted.

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G. Field Touch-Up

1. Painted Members: After erection, clean all damaged areas in shop coat, exposed surfaces of bolts, bolt heads, nuts and washers, abrasions, and all field welds and unpainted areas adjacent to field welds to the same standards as the shop coat and paint with same paint to same thickness as the shop coat. These areas shall be thoroughly cleaned of rust and other bond inhibiting materials before applying the touch-up paint. Paint all existing steel using the high-solids epoxy specified in Part 2. Finish painting is specified in Section 099101. Provide epoxy coat system for all exterior painting.
2. Galvanized Members: After erection, clean and paint all damaged areas to the galvanizing, welds, and areas adjacent to welds with the galvanizing repair paint. For galvanized members to be painted, finish painting is specified in Section 099101 and shall be the final two coats of the epoxy paint system.

3.04 TOLERANCES

- A. Erection tolerances shall be in accordance with "Code of Standard Practice for Steel Buildings and Bridges".

3.05 FIELD QUALITY CONTROL

- A. Cooperate with the Special Inspector and the Testing Laboratory performing Special Inspection testing.
- B. The Special Inspector will review erection of structural framework and test field bolting and welding as listed in Part 2 of this Section.
- C. The Contractor shall engage an engineer licensed in the state of New York to check tolerances and inspect the erection.

3.06 CLEANING

- A. Structural steel or portions of such to receive sprayed fireproofing shall be clean of dust, grease, oils, loose material, and any other matter which would impair the adhesion of the fireproofing material to the steel.

END OF SECTION

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SECTION 053100
FLUTED STEEL DECKS

PART 1 GENERAL

1.01 REFERENCES

- A. Comply with the following reference standards unless otherwise shown or specified:
1. Design: "Specification for the Design of Cold-Formed Steel Structural Members" by the American Iron and Steel Institute (AISI Specification).
 2. Welding: "Structural Welding Code - Sheet Steel, AWS D 1.3", by the American Welding Society (AWS Code).

1.02 SUBMITTALS

- A. Shop Drawings: Show application to project. Prepare separate drawings, coordinated with, but not superimposed on, joist drawings or structural steel erection drawings.
- B. Product Data: Manufacturer's printed specifications and installation instructions.

1.03 HANDLING AND STORAGE

- A. Handle and stack materials carefully in order to prevent deformation or damage. During unloading and hoisting, take extra care to prevent damage to ends and sides of individual metal deck panels. Do not place panels in direct contact with the ground. Protect panels from the elements and keep panels dry.
1. If mud, dirt, or other foreign matter is accumulated on panels, remove such accumulation completely prior to installation.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Fluted Deck and Metal Accessories: Sheet steel conforming to ASTM A 611 Grade C or ASTM A 653 SQ Grade 33. Before fabrication, sheet steel shall receive ASTM A 525, Class G 90, hot dip zinc coating; or, except

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where specified or shown to be galvanized, shall receive chemical cleaning, phosphate treatment, and baked on primer. Finish shall be evenly coated with no cracking after fabrication. Accessories shall be fabricated of not lighter than 18 US Standard Gage sheet steel.

- B. Self-Drilling Fasteners: No. 12-14 x 3/4 inch, hex washer head, self-drilling fastener with pilot point.
- C. Flexible Closure Strips: Manufacturer's standard vulcanized, closed-cell, synthetic rubber closure strips.

2.02 FABRICATION

- A. Steel deck shall be formed with maximum distance of 2-5/8 inches between flutes at upper faces and a minimum distance of 2 inches at lower flute faces. Furnish units in lengths to be continuous over 3 spans wherever possible.
- B. Steel deck shall conform to the following properties:
 - 1. Unit depth: 1 1/2"
 - 2. Minimum moment of inertia: 0.201 in⁴/ft
 - 3. Minimum US Standard Gage: 20
- C. Unless otherwise indicated or approved, fabricate deck for predetermined openings, and reinforce where required to maintain deck strength, alignment, and profile.
 - 1. Small openings, as recommended by the deck manufacturer, may be field cut.
- D. Accessories: Shop fabricated accessories, compatible with steel deck, as required to complete the Work, including, but not limited to, the following:
 - 1. Sheet metal cants beneath flashings when required for roofing over steel deck.
 - 2. Closures to close deck at ridges, valleys, and hips on roof deck slopes exceeding 1/2 inch per foot.
 - 3. Pour stops and girder fillers for concrete fill.
 - 4. Column closures, end closures, Z closures, and cover plates.
- E. Progress shop fabrication from "APPROVED" or "APPROVED AS NOTED" detail drawings only.

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1. When detail drawings are "APPROVED AS NOTED", progress fabrication in strict accordance with notes thereon.
2. Fabrication progressed from "DISAPPROVED" or "RETURNED FOR CORRECTION" detail drawings will be rejected. The contractor shall have no claim against the State for any costs or delays due to rejection of items fabricated from "DISAPPROVED" or "RETURNED FOR CORRECTION" detail drawings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine supporting framing and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance of steel deck.
- B. Do not start installation of metal deck until corresponding steel framework has been plumbed, aligned and completed and until temporary shoring, where required, has been installed. Coordinate installation sequence of metal deck with concrete encasement of steel beams.
- C. Steel surfaces to which materials, provided under this Section, are to be welded, shall be free of paint, ice, water, oil, dirt, rust and other materials detrimental to welding.
- D. Locate decking bundles to prevent overloading of supporting members

3.02 INSTALLATION

- A. Install the Work of this Section in accordance with the manufacturer's printed instructions except where shown or specified otherwise.
 1. Welding shall comply with the AWS Code.
 2. Perform welding free of sharp points.
- B. Place deck units on supporting steel framework and adjust to final position with ends bearing on supporting members and flutes in straight and true alignment through entire length of run before being permanently fastened. Do not stretch or contract side lap interlocks. Install temporary shoring before

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placing single span deck panels when required to meet manufacturer's recommendations.

- C. End Bearing: Install deck units over supporting framing with a minimum end bearing of 1-1/2 inches, with end joints as follows:
 - 1. Non-Composite Deck End Joints: Lapped 2 inches minimum.

- D. Deck Fastening: Fasten deck units at ends and intermediate supports with arc spot welds (puddle welds) not less than 3/4 inch diameter, at 12 inches on centers, along the supporting members, unless more stringent requirements are indicated on the drawings or required by the fire resistance ratings indicated on the drawings. Weld the first and last deck flutes. Use welding washers for all deck lighter than 20 gage. Deck units may be fastened to steel supports 0.18 inches or less in thickness (cold-formed metal framing) with No.12-14 x 3/4 inch self-drilling fasteners at 12 inches on center at ends and intermediate supports.

- E. Side lap fastening: Fasten side laps at intervals not exceeding 36 inches, using one of the following methods, unless more stringent requirements are indicated on the drawings or required by the fire resistance ratings indicated on the drawings:
 - 1. Mechanically fasten with self-drilling No.12 diameter or larger carbon steel screws.
 - 2. Mechanically button punch.

- F. Perimeter Edge Fastening: Weld starting and finishing side edges in bearing to supporting members at 36 inches on centers maximum, unless more stringent requirements are indicated on the drawings or required by the fire resistance ratings indicated on the drawings.

- G. Neatly field cut required openings, other than shop fabricated openings, after installation in accordance with the manufacturer's recommendations.

- H. Closures: Install flexible closure strips to effectively seal underside of flutes where fluted decks extend over exterior walls and also above interior partitions where there are no ceilings below the fluted deck.

END OF SECTION

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SECTION 055000
METAL FABRICATIONS

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Structural Steel (including framing for floor grating):
Section 051200.
- B. Field Painting: Section 099000.

1.02 REFERENCES

- A. Except as shown or specified otherwise, the Work of this Section shall meet the requirements of the following:
 - 1. Design, Fabrication, and Erection: "Specification for Structural Steel Buildings, Allowable Stress Design and Plastic Design" adopted by the American Institute of Steel Construction, June 1, 1989 (AISC Specification).
 - a. Design and Fabrication of Cold-Formed Shapes: "Specification for the Design of Cold-Formed Steel Structural Members", by the American Iron and Steel Institute (AISI Specification).
 - 2. Welding: "Structural Welding Code - Steel, AWS D1.1", or "Structural Welding Code - Sheet Steel, AWS D1.3", by the American Welding Society (AWS Codes).
- B. Organizations:
 - 1. AISC: American Institute of Steel Construction, One East Wacker Dr., Suite 700, Chicago, IL 60601-1802, 866-275-2472, www.aisc.org.
 - 2. AISI: American Iron and Steel Institute, 1140 Connecticut Ave., NW, Suite 705, Washington, D.C. 20036, (202) 452-7100, www.steel.org.
 - 3. AWS: American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126, (800) 443-9353, www.aws.org.
 - 4. ANSI: American National Standards Institute, 1819 L Street, NW, 6th Floor, Washington, DC 20036, (202) 293-8020, www.ansi.org.
 - 5. ASME: ASME International, 3 Park Ave., New York, NY 10016-5990, (800) 843-2763, www.asme.org.

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6. ASTM: ASTM International, 100 Barr Harbor Dr., PO Box C700, West Conshohocken, PA, 19428-2959, (610) 832-9500, www.astm.org.
7. MPI: The Master Painters Institute Inc., 2808 Ingleton Ave., Burnaby, BC, V5C 6G7, (888) 674-8937, www.specifypaint.com.
8. SSPC: The Society for Protective Coatings, 40 24th Street, 6th Floor, Pittsburgh PA 15222-4656, (877) 281-7772, www.sspc.org.

1.03 SUBMITTALS

- A. Shop Drawings: Show application to project. Machine duplicated copies of Contract Drawings will not be accepted.
 1. Locate anchor bolts required for installation in other Work; furnish setting drawings and templates for required anchors.
 2. Indicate shop and field welds by standard AWS welding symbols in accordance with AWS A2.4.
 3. Floor Grating: Submit erection plan; include cutout areas and clearances.
- B. Product Data: Catalog sheets, specifications, and installation instructions for each fabricated item specified, except submit data for fasteners only when indicated.

1.04 QUALITY ASSURANCE

- A. Galvanizing: Stamp galvanized items with galvanizer's name, weight of coating, and applicable ASTM number.

1.05 DELIVERY AND STORAGE

- A. Coordinate delivery of anchor bolts and other anchorage devices to be built into other construction to avoid delay.
- B. Promptly cover and protect steel items delivered to the site.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Steel Shapes, Plates, and Bars: ASTM A 36.

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- B. Steel Plates to be Bent or Cold-Formed: ASTM A 283, Grade C.
- C. Steel Pipe: ASTM A 53, type as selected, Grade A; black finish unless galvanizing is required; standard weight (Schedule 40), unless otherwise shown or specified.
- D. Anchors: Except where shown or specified, select anchors of type, size, style, grade, and class required for secure installation of metal fabrications. For exterior use and where built into exterior walls, anchors shall be galvanized or of corrosive-resistant materials.
 - 1. Threaded-Type Concrete Inserts: Galvanized ferrous casting, internally threaded to receive 3/4 inch diameter machine bolt; either malleable iron or cast steel.
 - 2. Wedge-Type Concrete Inserts: Galvanized box-type ferrous casting, designed to accept 3/4 inch diameter bolt having special wedge-shaped head; either malleable iron or cast steel.
 - a. Bolts: Carbon steel bolts having special wedge-shaped heads, nuts, washers and shims.
 - 3. Slotted-Type Concrete Inserts: Galvanized 1/8 inch thick pressed steel plate complying with ASTM A 283; box-type welded construction with slot designed to receive 3/4 inch diameter square head bolt and with knockout cover.
 - 4. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and equal to four times the load imposed when installed in concrete, as determined by testing per ASTM E 488, conducted by a qualified independent test agency.
 - a. Carbon Steel: Zinc-Plated; ASTM B 633, Class Fe/Zn 5.
 - b. Stainless Steel: Bolts, Alloy Group 1 or 2; ASTM F593, Nuts; ASTM F 594.
- E. Fasteners: Except where shown or specified, select fasteners of type, size, style, grade, and class required for secure installation of metal fabrications. For exterior use and where built into exterior walls, fasteners shall be galvanized.
 - 1. Standard Bolts and Nuts: ASTM A 307, Grade A, regular hexagon head.

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2. Stainless Steel Fasteners: ASTM A 666; Type 302/304 for interior Work; Type 316 for exterior Work; Phillips flathead (countersunk) screws and bolts for exposed Work unless otherwise specified.
 3. Eyebolts: ASTM A 489.
 4. Machine Bolts: ASME B18.5 or ASME B18.9, Type, Class, and Form as required.
 5. Machine Screws: ASME B18.6.3.
 6. Lag Screws: ASME B18.2.1.
 7. Wood Screws: Flat head, ASME B18.6.1.
 8. Plain Washers: Round, ASME B18.22.1.
 9. Lock Washers: Helical, spring type, ASME B18.21.1.
 10. Toggle Bolts: Spring Wing Type; Wing AISI 1010, Trunion Nut AISI1010 or Zamac Alloy, Bolt Carbon Steel ANSI B18.6.3.
- G. Shop Paint (General): Universal shop primer; fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
- H. Shop Paint for Galvanized Steel: Epoxy zinc-rich primer; complying with MPI#20 and compatible with topcoat.
- I. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- J. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.02 FIXED LADDERS

- A. Fabricate ladders to span between elevations at locations indicated. Comply with the requirements of ANSI A 14.3 unless otherwise shown or specified.
- B. Side Rails: Continuous, structural steel, flat solid bars with eased edges, spaced 18 inches apart.
1. Rail Size: 1/2 x 2-1/2 inches.
 2. Rail Size: 3/8 x 2-1/2 inches.
- C. Rungs: Structural steel, round solid bars, spaced 12 inches oc.
1. Rung Size: 1 inch diameter.
 2. Rung Size: 3/4 inch diameter.

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3. Non-slip Surface: The top of each rung shall have a non-slip surface, achieved either by coating the rung with aluminum oxide grit set in epoxy resin adhesive or by use of manufactured rung filled with aluminum oxide grout.
- D. Fit rungs into punched holes in centerline of side rails, plug weld and grind welds smooth on outer face of rails.
- E. Supports: Locate supports for each side rail near top rung, at bottom of ladder, and at intermediate points spaced not more than 5'-0" oc. Use welded or bolted steel brackets or straps for wall anchors, designed for adequate support and anchorage to hold the ladder 6 inches clear of the wall surface and other obstructing construction.
- F. Except for ladders terminating at a hatch, extend side rails 3'-6" minimum above top rung and return rails to wall or structure; if construction does not extend above the top rung, goose-neck the extended rails back to the structure. Flare out side rails for through ladder extensions. For side-step ladders, continue the rungs also in the extension.
- G. Galvanize exterior ladders and supports.
- H. Safety Chain: ASTM A 666; Type 316 stainless steel, straight link individually welded, 3/8 inch trade size.
 1. Eye Bolts: Drop forged stainless steel, shoulder pattern, threaded, 1/4 inch diameter.
 2. Snap Eye Bolts: Chrome plated, 5/8 inch swivel loop, 3/8 inch snap opening.

2.03 STEEL PIPE RAILINGS AND HANDRAILS

- A. Fabricate railings and handrails of 1-1/2 inch (nominal) diameter steel pipe, unless otherwise shown.
- B. Railings: Unless otherwise shown, railings shall consist of top rail and intermediate rails, with posts spaced not more than 4 feet oc. Close ends of rails which do not terminate with a flange or continuous return.
 1. Space rails so that a sphere 4 inches in diameter cannot pass through the openings between the rails.
 2. Join posts, rails, and corners by one of the following methods:

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- a. Flush-type steel railing fittings, welded and ground smooth, with railing splice locks secured with 3/8 inch hexagonal-recessed-head setscrews.
 - b. Coped and welded joints made by fitting post to top rail and intermediate rail to post, mitering corners, groove welding joints, and grinding joints smooth. Butt railing splices and reinforce by a tight-fitting interior pipe sleeve not less than 6 inches long secured in place.
 3. Railings may be bent at corners instead of joining, provided the bends are uniformly formed in jigs, with cylindrical cross-section of pipe maintained throughout the entire bend.
 4. Unless otherwise shown, fabricate railings and accessories as necessary to secure posts and rail ends to construction as follows:
 - a. Anchor posts in concrete by means of post sleeves preset into the concrete.
 - b. Anchor posts to steel with steel flanges, angle type or floor type as required by conditions, welded to posts and bolted to the steel supporting members.
 - c. Anchor rail ends into concrete and solid masonry with round steel flanges welded to rail ends and anchored into the wall construction with expansion anchors.
 - d. Anchor rail ends to steel with oval or round steel flanges welded to rail ends and bolted or welded to the steel supporting members.
 5. Post Sleeves: Galvanized steel pipe not less than 6 inches long, and having an inside diameter not less than 1/2 inch greater than the outside diameter of the pipe post. Sleeve shall have a plate closure, sized to extend not less than 1 inch beyond the outside diameter of the sleeve, secured to the bottom of the sleeve.
 - a. Cover Flange: Round steel flange, sized to closely fit post and cover the sleeve.
 6. Fabricate removable railing sections as indicated on the Drawings.
- C. Handrails: Pipe handrails shall be secured to walls by means of wall brackets, and shall have a wall return fitting at each end of handrails unless otherwise shown.
1. Wall Brackets: Malleable iron castings, with 3 inches projection from the finish wall surface to the center of the handrail, and with the wall

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plate portion of the bracket drilled to receive one 3/8 inch diameter bolt. Brackets shall be located approximately 6 inches from each end of handrails and intermediate brackets equally spaced at intervals not exceeding 5 feet oc. Fabricate wall brackets to secure to wall construction as follows:

- a. Anchor into concrete and solid masonry with expansion anchors.
 - b. Anchor into hollow masonry and stud partitions with toggle bolts having square heads.
2. Wall Return Fittings: Cast iron castings, flush-type, with the same projection as specified for wall brackets.
- D. Galvanize all exterior railings and handrails, and interior railings and handrails where indicated on the Drawings, including pipe, flanges, fittings, brackets, fasteners, and other ferrous metal components.

2.04 SAFETY NOSINGS

- A. Nosings: Cast, abrasive non-slip type, of profiles indicated, extending full length of concrete treads or other concrete edges to be protected unless otherwise indicated. Equip each nosing with integrally cast, welded, or riveted anchors located not more than 4 inches from each end of nosing and intermediate anchors spaced not over 15 inches oc. Abrasive grain shall be integrally cast into the wearing surface.
1. Metal:
 2. Tread Nosing Units: 4 inches wide x 5/16 inch thick, with 1 inch minimum deep protective front lip.
 3. Curb Bar Nosing Units: 2-1/2 x 2-1/2 x 1/2 inch thick.
 4. Curb Bar Nosing Units: 1-1/2 x 1-1/2 x 3/8 inch thick.
 5. Surface Design: Cross-hatched abrasive.
 6. Surface Design: Fluted abrasive.
 7. Surface Design: Plain abrasive.

2.05 FLOOR GRATING

- A. Grating: Rectangular, welded steel bar grating designed to support 200 lb/sq ft with deflection not exceeding 1/180. Fabricate with bearing bars on edge, and with all intersecting and abutting members joined

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by the electro-pressure welding method for the full depth of cross bar. Steel Bars: ASTM A 569.

1. Top Surface of Bearing Bars: Plain.
2. Top Surface of Bearing Bars: Serrated.
3. Finish: One coat of grating manufacturer's standard shop paint.
4. Finish: Galvanized.
5. Fasteners for Removable Panels: Saddle clip anchor assembly, with self-drilling screw or weldable stud bolt. Clips shall have same finish as grating.
6. Banding: Continuous steel bar of same material and size as bearing bars, welded to grating panel.
7. Close Outs at Steps and Stairs: Special grating panel with nosing edge for platform ending at top of stairs.

2.06 FABRICATION

- A. Use materials of the sizes and thicknesses indicated on the Drawings. If not indicated, use material of required size and thickness to produce adequate strength and durability for the intended use of the finished product.
- B. Fabricate items to be exposed to view of material entirely free of surface blemish, including pitting, roller and seam marks, rolled trade names, and roughness. Remove surface blemishes by grinding or by welding and grinding prior to cleaning, treating, and finishing.
- C. Form metal true to line, with accurate angles, surfaces, and straight edges. Ease exposed edges to a radius of approximately 1/32 inch unless otherwise shown. Form bent-metal corners to the smallest radius possible without causing grain separation or otherwise impairing the metal.
- D. Weld corners and seams continuously. Grind exposed welds smooth and flush, to match and blend with adjoining surfaces.
- E. Form exposed connections with flush, smooth, hairline joints. Use concealed fasteners wherever possible. Use Phillips flathead (countersunk) screws or bolts for exposed fasteners, unless otherwise shown or specified.
- F. Prepare fabricated items for anchorage of the type indicated, coordinated with the supporting structure.

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Fabricate and space anchoring devices as indicated or, if not indicated, as required to produce adequate support for the intended use of the item.

- G. Punch, reinforce, drill, and tap fabricated items as required to receive hardware and other appurtenant items.
- H. Galvanizing:
 - 1. In addition to specific items specified or noted to be galvanized, galvanize items attached to, embedded in, or supporting exterior masonry (including interior wythe of exterior masonry walls) and concrete Work.
 - 2. Unless otherwise specified or noted, items indicated to be galvanized shall receive a zinc coating by the hot-dip process, after fabrication, complying with the following:
 - a. ASTM A 123 for plain and fabricated material, and assembled products.
 - b. ASTM A 153 for iron and steel hardware.
- I. Shop Painting:
 - 1. Cleaning Steel: Thoroughly clean all steel surfaces. Remove oil, grease, and similar contaminants in accordance with SSPC SP-1 "Solvent Cleaning". Remove loose mill scale, loose rust, weld slag and spatter, and other detrimental material in accordance with SSPC SP-2 "Hand Tool Cleaning", SSPC SP-3 "Power Tool Cleaning", or SSPC SP-7 "Brush-Off Blast Cleaning".
 - 2. Galvanized Items:
 - a. Galvanized items which are to be finish painted under Section 099000 shall be rinsed in hot alkali or in an acid solution and then in clear water.
 - b. Welded and abraded areas of galvanized surfaces shall be wire brushed and repaired with a coating of cold galvanizing compound.
 - 3. Apply one coat of shop paint to all steel surfaces except as follows:
 - a. Do not shop paint steel surfaces to be field welded and steel to be encased in cast-in-place concrete.
 - b. Apply 2 coats of shop paint, before assembly, to steel surfaces inaccessible after assembly or erection, except surfaces in contact.
 - c. Do not paint galvanized items which are not to be finish painted under Section 099000.

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4. Apply paint and compound on dry surfaces in accordance with the manufacturer's printed instructions, and to the following minimum thickness per coat:
 - a. Shop Paint (General): 4.0 mils wet film.
 - b. Shop Paint for Galvanized Steel: 3.0 mils wet film.
 - c. Galvanizing Repair Paint: 2.0 mils dry film.

PART 3 EXECUTION

3.01 PREPARATION

- A. Temporarily brace and secure items which are to be built into concrete, masonry, or similar construction.
- B. Isolate non-ferrous metal surfaces to be permanently fastened in contact with ferrous metal surfaces, concrete, or masonry by coating non-ferrous metal surface with bituminous mastic, prior to installation.

3.02 INSTALLATION

- A. Fit and set fabricated metal items accurately in designed locations, at proper elevation and alignment.
- B. Use anchorage devices and fasteners of required type, size, and number as required to provide a secure, rigid installation.
- C. Fit exposed connections accurately to form tight hairline joints. Weld connections which are not intended to be left as exposed joints, but cannot be shop welded because of size limitations. Grind welded joints smooth. Cut off exposed threaded portion of bolts flush with nut.
- D. Attached Work: Drill holes for fasteners with power tools to exact size required. Unless otherwise shown on the Drawings, fasten metal Work to concrete and solid masonry anchorage with expansion anchors. Fasten metal Work to hollow masonry and stud partitions with square head toggle bolts.
- E. Field Welding: Comply with AWS Codes for the procedures for shielded metal arc welding, for the appearance and quality of welds, and for the methods used in correcting welding Work.

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- F. Railings: Adjust railings prior to securing in place to insure alignment and proper matching at joints. Plumb posts in each direction. Secure posts and rail ends to construction as follows:
1. Anchor posts in concrete with post sleeves preset into the concrete. After the posts have been inserted into the sleeves, fill the annular space between post and sleeve solid with molten lead or an exterior quick-setting hydraulic cement. Cover anchorage joint with a cover flange.
 2. Anchor posts to steel with steel flanges, angle type or floor type as required. Weld flanges to posts, and bolt to the steel supporting members.
 3. Anchor rail ends to concrete and masonry with round steel flanges. Weld flanges to rail ends, and anchor into the wall construction with expansion anchors.
 4. Anchor rail ends to steel with steel oval or round flanges. Weld flanges to rail ends, and weld or bolt to the steel supporting members.
- G. Grating: Weld grating to supporting members, unless otherwise shown or specified.
1. Secure removable panels with saddle clip anchor assemblies.

END OF SECTION

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SECTION 061053
WOOD NAILERS AND BLOCKING

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Built-Up Bituminous Roofing System: Section 075100.

1.02 QUALITY ASSURANCE

- A. Mill and Producer's Stamp: Each piece of lumber shall bear a stamp indicating type, grade, mill, and grading agency.
1. Pressure treated wood shall bear a stamp or tag indicating the name of the treating company, year treated, preservative used, the level of treatment, intended use (appropriate AWPA Standard), and logo of inspecting company.

1.03 STORAGE

- A. Store lumber a minimum of 6 inches off the ground, in a dry, well-ventilated place, protected from the weather.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Lumber: "Standard" Grade Douglas Fir, Hem-Fir, White Pine, Southern Pine, or Spruce-Pine-Fir pressure preservative treated in accordance with the American Wood Preservers Association (AWPA) Standard U1, Commodity Specification A for the requirements listed under Use Category UC2 and kiln dried to 19 percent moisture content after treatment.
1. Use Category UCFB: Wood nailers and blocking intended for fire protection and is used in exterior construction, exposed to weather (UCFB).
- B. Nails, Screws, and Bolts: ASTM A653 Class G185 hot dipped galvanized, zinc or cadmium plated, or silicon bronze.

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1. Screws and Bolts for fastening to Aluminum:
Stainless steel, Type 304 or 316.
- C. Expansion Anchors: G185 Hot dipped galvanized steel wedge anchors, FS FF-S-325, Group II, Type 4, Class 1.
- D. Toggle Bolts: Cadmium or zinc plated tumble - wing type; FS FF-B-588.
- E. Separation Membrane For Aluminum Metals: Self adhering, self sealing, rubberized asphalt sheet membrane.
 1. Physical Properties:
 - a. Thickness: 40 mils minimum ASTM D 3767 Method A.
 - b. Tensile strength: 250 psi ASTM D 412.
 - c. Elongation (ultimate failure of the rubberized asphalt) 250% ASTM D 412 Die C Modified).
 - d. Permeance: 0.05 Perms max.) ASTM E 96.
 2. "Ice And Water Shield" by W.R. Grace Co., 62 Whittemore Ave., Cambridge, MA 02140, (800) 354-5414; "Deck Guard" by Polyguard Products Inc., P.O. Box 755, Ennis, TX 75120, (800) 541-4994; "MetalSeal" by NEI Advanced Composite Technology, 50 Pine Road, Brentwood, NH, (800) 998-4634.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install nailers and blocking true to line and plane within a tolerance of 1/8 inch in 10 feet.
- B. Fit joints neatly with no more than 1/16 inch space between abutting members.
- C. Do not install nailers or blocking across bonding expansion joints.
- D. Attach nailers and blocking securely as required to properly support the items that will be attached to them.
- E. Space fasteners equally at not more than 16 inches on center and 4 inches from each end of each member, unless noted otherwise. Secure the nailers and blocking with the following types of fasteners:

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1. To Cast-In-Place Concrete: Use expansion anchors or self-threading masonry screws.
 2. To Wood: Use nails or screws.
 3. To Metal: Use bolts or self-tapping screws.
- F. Countersink fasteners if they interfere with the proper installation of items to be attached to the nailers and blocking.

3.02 APPLICATION OF SEPARATION MEMBRANE

- A. Installing Separation Membrane:
1. Install 1 ply of underlayment over the entire horizontal and vertical surface of pressure treated wood nailers and blocking lapping each ply 2 inches over the preceding ply so that no aluminum material comes in contact with pressure treated wood.

END OF SECTION

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SECTION 070150

MAINTENANCE OF MEMBRANE ROOFING

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Sheet Metal Flashing and Trim: Section 076100.

1.02 SYSTEM DESCRIPTION

- A. The Work of this Section consists of minor modifications to the existing warranted roof system.
1. Existing Type of Roof System: Built Up Bituminous Roofing System.
 2. Existing Roof System Manufacturer: Contractor to verify with the City of New York existing roof system manufacturer.

1.03 SUBMITTALS

- A. Submittals Package: Submit the product data and quality control submittals specified below at the same time in one complete package. Partial submittal will not be considered.
- B. Product Data:
1. Membrane manufacturer's installation instructions and details for the Work of this Section.
 2. Manufacturer's data sheets for all materials required for the Work of this Section.
- B. Quality Control Submittals:
1. Material Certification: Letter from the existing roof system manufacturer certifying that the materials used for the Work of this Section are approved for use with the existing system.
 2. Warranty Certification: Letter from the existing roof system manufacturer certifying that the Work of this Section will not modify or void the existing warranty.

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1.04 QUALITY ASSURANCE

- A. Applicator's Qualifications: The Work of this Section shall be performed by an applicator having not less than three (3) years with roofing systems similar to existing.
- B. Material Certification: The materials used for the Work of this Section shall be approved by the existing roof system manufacturer.
- C. Warranty Certification: The Work of this Section shall not modify or void the existing roof system warranty.
 - 1. Submit a copy of the Contract Documents to the existing roof system manufacturer for review and approval.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to the site in the manufacturer's labeled, unbroken containers.
- B. Storage and Handling: Store materials in a dry, well ventilated place protected from the weather.
 - 1. Volatile liquids shall be stored in a separate storage building or trailer, or removed from the Site at the end of each work day.
 - 2. Store volatile liquids at temperatures recommended by the manufacturer.
 - 3. Store adhesives at temperatures between 60 degrees F and 80 degrees F.

1.06 PROJECT CONDITIONS

- A. Do not execute the Work of this Section unless the substrate is dry and free of dirt and debris.
- B. Moisture Protection:
 - 1. Cover, seal or otherwise protect the roof and flashings so that water cannot accumulate or flow under completed portions. When and where necessary to accomplish this, provide temporary water cut-offs in accordance with the membrane manufacturer's written specifications.
 - 2. Limit the removal of existing materials to areas that can be completely re-roofed or temporarily protected within the same day.

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- C. Do not smoke or use open flames near volatile materials.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Provide all the materials required to complete the Work of this Section. All materials shall be approved by the existing roof system manufacturer.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install the Work of this Section as shown on the Contract Drawings and in accordance with the existing roof system manufacturer's written instructions.
 - 1. Install the Work of this Section so that the watertight integrity of the existing system is not compromised.

END OF SECTION

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SECTION 071613
CEMENTITIOUS WATERPROOFING

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

N/A

1.02 SUBMITTALS

- A. Product Data: Catalog sheets, specifications, and application instructions for each material specified.
- B. Samples:
 - 1. Cementitious Coating: One pound of dry powder mix.
 - 2. Acrylic Additive: One quart.
- C. Quality Control Submittals:
 - 1. Test Reports: If requested by the Commissioner, furnish certified test data issued by an independent testing laboratory, demonstrating that the products submitted comply with the required physical properties.

1.03 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Manufacturer's Qualifications: The manufacturer shall have qualified technical representatives with the technical expertise to advise the Contractor of application procedures required for coating materials under the particular job conditions.
- B. Field Examples:
 - 1. On actual surfaces designated by the Commissioner, apply a sample application of the cementitious waterproof coating. Apply coating on at least 100 sq ft of surfaces.
 - 2. Sample application accepted by the Commissioner will be used as the standard of comparison for the Work.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Storage and Protection:

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1. Comply with the manufacturer's printed instructions for material storage requirements.

1.05 PROJECT CONDITIONS

- A. Environmental Requirements:
1. Do not apply materials to surfaces that contain free water or frost.
 2. Do not apply materials when temperature is below 40 degrees F or will fall below 40 degrees within 24 hours.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Cementitious Waterproof Coating: Factory blended and packaged dry powder mix; "Thoro/BASF Building System, "Sonoblock" by Sonneborn/BASF Building System, or other material complying with Federal Specification TT-P-0035 and having the following physical properties:
1. Compressive Strength (ASTM C 109): 4000 psi at 7 days, 6000 psi at 28 days.
 2. Tensile Strength (ASTM C 190): 250 psi at 7 days, 425 psi at 28 days.
 3. Flexural Strength (ASTM C 348): 350 psi at 7 days, 1000 psi at 28 days.
 4. Absorption (ASTM C 67): 3.6 percent.
 5. Freeze/Thaw Resistance (ASTM C 666, Method B): No cracking or delaminating after 200 cycles.
 6. Water Vapor Transmission (ASTM E 96, Procedure A): 11.420 grams/meter²/24 hours.
 7. Resistance to Wind-Driven Rain (FS TT-P-0035): No moisture penetration after 8 hours at 98 MPH wind pressure.
 8. Accelerated Weathering (FS TT-P-0035): No checking, cracking, or loss of adhesion after 5000 hours of weatherometer exposure.
 9. Static Test (FS TT-P-0035): No failure after 30 minutes 30 lbs. per sq. ft.
- B. Color: As selected by the Director from manufacturer's standard colors.
- C. Acrylic Additive: "Acryl 60" by Thoro/BASF Building System, "Acrylic Additive" by Sonneborn/BASF Building System, or a comparable

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product recommended by the cementitious coating manufacturer.

- D. Cleaning Agents: Products recommended by the cementitious coating manufacturer for the particular conditions.

PART 3 EXECUTION

3.01 PREPARATION

- A. Protection: Protect adjacent surfaces not required to be coated.
- B. Surface Preparation:
 - 1. Remove all debris, dirt, dust, and other substances that are detrimental to the application of the cementitious waterproofing.
 - 2. Remove existing paints and coatings. Use cleaning agents and methods recommended by the cementitious coating manufacturer.
 - 3. Remove laitance and efflorescence with a 10 percent solution of hydrochloric (muriatic) acid, followed by a thorough wash with clean water.

3.02 APPLICATION

- A. Plan the Work with enough workers and scaffolding so breaks in the cementitious coating application are at natural stopping points recommended by the coating manufacturer and approved by the Commissioner.
- B. Mixing: Follow the cementitious coating manufacturer's recommendations unless otherwise specified.
 - 1. Use clean containers for mixing.
 - 2. Power mix materials with mechanical mixing equipment.
 - 3. Mix only the amount of material that can be applied within "open time". Do not re-work set or hardened material; remove such material from the site.
 - 4. Liquid solution shall consist of 3 parts of clean water and 1 part acrylic additive,

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- unless otherwise recommended by the cementitious coating manufacturer for the particular conditions.
5. Proportion and mix liquid solution and powder in accordance with the cementitious coating manufacturer's recommendations for the application indicated.
- C. Immediately before application, dampen dry surfaces with clean water.
- D. Apply cementitious coating in compliance with the coating manufacturer's recommendations unless otherwise specified.
- E. Cementitious Waterproof Coating:
1. Brush on and evenly distribute a base coat of the mix at the minimum rate of 2 lbs per sq yd. Cure base coat for 24 hours or longer if required by environmental conditions. Apply a finish coat of the mix at the minimum rate of 1 lb per sq yd.
 3. Brush apply a base coat of the mix at the minimum rate of 2 lbs per sq yd. Trowel apply a second coat at the minimum rate of 12 lbs per sq yd or sufficient material to bring the surface true and level. After material stiffens, sponge float to an even uniform surface to obtain desired texture.
- G. Apply minimum total coating thickness of 1/8 inch, or coating thickness(es) indicated on the Drawings.
- H. Curing: If rapid drying occurs, spray the finished surface with a water mist as required to keep the surface damp. Water mist for the period of time recommended by the cementitious coating manufacturer.

3.03 CLEANING

- A. Clean adjacent surfaces that have been soiled or defaced by the execution of this Work.
- B. Remove protective covers.

END OF SECTION

SECTION 075100
BUILT-UP BITUMINOUS ROOFING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide all built-up bituminous roofing Work as indicated on the Drawings and as specified herein, including, but not limited to, the following:

1. Removal of existing roofing materials, as applicable.
2. Built-up Roofing System
3. Rigid Insulation
4. Vapor Barrier

1.02 REFERENCES

- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.
- B. American Society for Testing and Materials (ASTM).
- C. Underwriters Laboratories, Inc. (UL).
- D. National Roofing Contractors Association (NRCA).
- E. Thermal Insulation Manufacturers Association (TIMA).
- F. Federal Specifications (FS)
- G. Factory Mutual System (FMS)
- H. United States Environmental Protection Agency (EPA)

1.03 SUBMITTALS

A. Submittals Package - General

Submit the Shop Drawings, Product Data, Samples, and Quality Control Submittals specified below at the same

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time as a package. All submittal packages must be submitted prior to the Pre-Installation conference.

B. Product Data.

1. Catalog sheets, Specifications and installation instructions for each material specified.
 - a. Product data for reflective roof coatings for application on mineral surfaced cap sheet shall bear an EPA "Energy Star" label.
2. Manufacturer's Warranty: Sample copy of the membrane manufacturer's 20-year warranty covering workmanship and materials.

C. Membrane Manufacturer's Letter of Intent to Warranty

Prior to the Pre-Installation Conference, the Contractor shall register the project with the membrane manufacturer and shall submit the membrane manufacturer's letter of intent to warranty the roof as specified herein.

D. Shop Drawings

1. When there is a proposed deviation from the Contract Documents, submit the revised detail labeled as such for approval. The revised detail shall show existing conditions and shall be referenced directly to the related details on the Contract Drawings.
2. Submit an accurate layout of the tapered insulation showing the slopes to the drains. Show cross Section Drawings illustrating the location and thickness of tapered insulation pieces and filler pieces. Show the thickness of the insulation system at high and low points.
3. Submit an accurate layout of the wood nailers showing their required locations, and required spacing between nailers. Show the direction of the felt run in relation to the slope of the deck and the wood nailers.
4. Grade Survey
 - a. Contractor shall engage a New York State Licensed Surveyor to control accurately the thickness and slope of the concrete fill, screed coat and drain elevations. The cost of

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the Surveyor's services shall be included in Contractor's bid price. Submit all grade Drawings required hereinafter with Surveyor's seal and signature to Commissioner for an approval.

- b. The elevations shall be taken at the perimeter of roofs, at all drains, at high and low spots, and on the edges of square grid not exceeding 25'-0".
- c. All Drawings shall be done at the scale of 1/8" = 1'-0". All elevations shown on the Drawings shall be referred to a convenient datum accessible at all times regardless of the stage of Work, and not altered by the Work.
- d. Submit grade Drawings indicating all existing and proposed grade elevations required to establish a minimum slope of 1/8" per foot prior to removal of existing roofing system.

E. Samples

- 1. Roofing Membrane: 13 in. by width of roll, each type.
- 2. Base Flashing: 13 in. by width of roll, each type.
- 3. Vent Base Sheet: 13 in. by width of roll, each type.
- 4. Insulation: One 6" sq. piece, each type.
- 5. Aggregate Surfacing: 1 pound.
- 6. Fasteners: 3, each type.
- 7. Field sample of Bitumen (each load)
- 8. Termination Bar
- 9. Expansion joint flashing

F. Quality Control Submittals

- 1. Test Reports
 - a. Roof drain and leader test

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- b. Roof deck fastener pullout test
- c. Daily bitumen temperature charts
- d. Field test strips (if requested)
- e. Roof flood test
- f. Field test report certifying that the installed gravel conforms to the specified requirement of at least 30% solar reflectance.

2. Certifications and Approvals

- a. Written certification that the roof system, including the specific insulation, has been tested in conjunction with the type of structural roof deck and roof slope applicable to the project and has achieved an Underwriters Laboratories Class A or B external fire resistance rating.
 - 1) Acceptable Certification: Letter from Underwriters Laboratories, or a copy of the Underwriters Laboratories classification listing for the roofing system.
- b. Letter from the roofing membrane manufacturer certifying that the insulation is approved for use with the roofing system.
- c. Bitumen certification for each delivery
- d. Submit prior to installation a signed statement for moisture testing of roof deck.
- e. Written certification that roof assembly meets or exceeds Factory Mutual wind uplift resistance rating I-90.
- f. Certification by an approved independent testing laboratory certifying that the gravel proposed for the project conforms to specified requirements for solar reflectance.
- g. Membrane manufacturer's written approval of the Contractor's method of protecting the roof during other construction operations, including existing roofing that is to remain under an existing warranty.

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3. Qualifications

a. Membrane Manufacturers Certifications:

- 1) Submit a letter certifying that the manufacturer has been experienced in the submitted system for a minimum of 3 years.

b. Applicator's Certification:

- 1) Letter from the membrane manufacturer certifying that the applicator is licensed or approved to install the roof system.
- 2) Names, address, and telephone numbers of buildings where the applicator has installed built-up roofing systems that have the manufacturer's warranty issued. Include the types of built-up roofing systems installed, the manufacturer's name, and the warranty numbers.
- 3) Letter certifying that the installer have installed at least three built-up roofing systems and are thoroughly familiar with all aspects of the installation.

G. Contract Closeout Submittals

1. Contractor's 2-year guarantee
2. Manufacturer's 20-year guarantee.

1.04 QUALITY ASSURANCE

A. Membrane Manufacturer's Qualifications

1. The manufacturer shall have the technical expertise and qualified technical representatives to quickly resolve questions or problems which may arise both during and after the Work is completed.
2. The manufacturer shall have been experienced in the built-up roof system in the United States for a minimum of 3 years.
3. The manufacturer shall provide the names, addresses, and telephone of previous projects of

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comparable size, scope, and complexity as the Work of this Section.

4. The manufacturer must require that the roof system be installed by a licensed or approved applicator has not less than three (3) years of experience in the application of built-up roof system installation.

B. Roofing Installation Qualifications

1. Roofing Firm Qualifications

- a. Installation of a built-up roofing systems of 3-ply (or greater) membranes, or of roofing system specified in the Contract Documents, including all related sheet metal work.
- b. In continuous operation of installing such roofing systems.
- c. Certified installer for nationally recognized roofing materials manufacturer.

C. Fire Department Regulations

Equipment and fuel shall meet the requirements of the New York City Fire Department.

D. Fire Hazard Classification

The built-up roof system shall have an Underwriters Laboratories Class A or B External Fire Resistance rating; as determined by tests conducted in conformity with UL-790 (ASTM E108).

1. The roof system, which includes a specific generic type of insulation and in some instances a specific name brand insulation, shall have been tested in conjunction with the type of structural roof deck and roof slope applicable to the project.

E. Company Field Advisor

Secure the services of a Company Field Advisor of the membrane manufacturer for a minimum of 16 working hours. The Field Advisor shall be certified in writing by the manufacturer to be technically qualified in design, installation, and servicing of the required products. Personnel involved solely in sales do not qualify. The Field Advisor shall be present at the Pre-Installation

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Conference and at the beginning of the actual membrane installation for the purpose of:

1. Rendering technical assistance to the Contractor regarding installation procedures of the system.
2. Familiarizing the Commissioner with all aspects of the system including inspection techniques.
3. Answering all questions which might arise.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Delivery

1. Roofing materials shall be delivered to the site in the manufacturer's unbroken containers and shall bear the manufacturer's printed labels.
2. a. All bitumen delivered in cartons must have the following printed on the carton:

Manufacturer
Type (ASTM)
SP (Softening Point)
FP (Flash Point)
FBT (Finished Blowing Temperature)
EVT (Equiviscous Temperature)

- b. All bitumen delivered in tanker trucks shall be accompanied by the manufacturer's certification stating: manufacturer's name, type, softening point range, flash point, and compliance with ASTM Specifications.

- 1) Certification for Asphalt Bitumen shall also state the equiviscous temperature range and the finished blowing temperature range.

B. Storage and Handling

1. Store materials a minimum of 6" off the ground, in a dry, well ventilated place protected from the weather. Enclosed trailers are recommended.
2. Do not stock pile aggregate surfacing materials on unsurfaced felt which are in place on the roof.
3. Mark for identification all materials which become wet. Remove such materials for the site.

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4. Handle roll goods with care; store on end. Do not use roll goods which have been damaged.

1.06 PROJECT CONDITIONS

A. Temperature

Do not apply built-up roofing when the deck or air temperature is below 40° F.

- B. Do not execute the Work of this Section unless the substrate is dry, and free from debris and dust.

C. Moisture Protection

1. Cover, seal, and otherwise protect the roof and all flashings so that water cannot accumulate or flow under the completed portions. When and where required, provide temporary water cut-offs in accordance with the roofing manufacturer's written Specifications.

2. For existing roof: Limit the removal of existing materials to areas that can be completely re-roofed or temporarily protected within the same day. Temporary protection shall not be considered part of the system.

1.07 GUARANTEE AND WARRANTY

A. Contractor's Guarantee

Two year written guarantee covering defects in materials and/or workmanship. Performance Bond shall be for the entire two-year period. Also includes repair to all ancillary areas damaged due to leaks.

B. Manufacturer's Warranty

In addition to the Contractor's guarantee, furnish the membrane manufacturer's printed No-Dollar-Limit 20-year warranty for the Work of this Section. The warranty shall include but not be limited to, repair or replacement of components of the roofing system that fail in materials or workmanship. Failure includes roof leaks.

The warranty shall cover all components of the Work of this Section, including but not limited to asphalt, sheets, membranes, insulation, composition flashing, cements, warrantable penetration seals, penetration flashing and low flashing, coatings, expansion joints,

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fasteners, cants, and gravel. The roof system shall be warranted to remain watertight for 20 years. In the event that defects or leaks occur the manufacturer shall make repairs to correct them.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Asphalt Primer and Asphalt

1. GAF Building Materials Corp., South Bound Brook, NJ.
2. Johns Manville, Denver, CO.
3. Tamko Asphalt Products, Joplin, MO.
4. Or approved equal.

B. Base Sheet

1. GAF GAFGLAS #75.
2. Johns Manville GlasBase.
3. Tamko Glass-Base.
4. CertainTeed Glasbase Base Sheet

C. Vent Base Sheet

1. GAF GAFGLAS Stratavent.
2. Johns Manville Ventsulation.
3. Tamko Vapor-Chan.
4. CertainTeed Channel Vent Base Sheet

D. Roofing Membrane, Vapor Barrier and Cover Strip

1. GAF GAFGLAS Ply 6.
2. Johns Manville GlasPly Premier.
3. Tamko TamGlas Premium.
4. CertainTeed FlintGlas Premium Ply Sheet Type VI

E. Insulation

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1. Composite Insulation Board
 - a. GAF GAFTEMP Composite Board Insulation
 - b. Johns Manville Fesco Foam Isocyanurate, or ENRGY 3 Plus.
 - c. AC Foam II with 1/2" perlite on top, by Atlas Energy Products, Atlanta, GA.
 - d. CertainTeed Flintboard Iso Plus Composite
2. Isocyanurate Insulation Board
 - a. GAFTEMP Isotherm R by GAF.
 - b. ENRGY 3 Isocyanurate by Johns Manville.
 - c. AC Foam II by Atlas Energy Products, Atlanta GA.
 - d. CertainTeed Flintboard Iso
3. Top Layer of Three Layer System
 - a. 1/2" High-density fiberboard or perlite by GAF.
 - b. 1/2" Retro-fit Board by Johns Manville.
 - c. 1/2" Perlite Board by Atlas.

F. Base Flashing

1. Two base plies:
 - a. GAF GAFGLAS Ply 6.
 - b. Johns Manville GLasPly Premier.
 - c. Tamko TamGlass Premium.
 - d. CertainTeed FlintGlas Premium Ply Type VI
2. One ply cap sheet:
 - a. GAF Ruberoid MOP FR.
 - b. Johns Manville Dynaflex.
 - c. Tamko Awaplan Premium.

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- d. CertainTeed Flintlastic Premium FR-P
- G. Mineral-Surfaced Modified Bitumen Asphalt Membrane
 - 1. GAF Ruberoid MOP FR
 - 2. Johns Manville Dynakap
 - 3. Tamko Awaplan Premium
 - 4. CertainTeed Flintlastic Premium FR-P
- H. Reflective Elastomeric Coating for Mineral-Surfaced Membrane
 - 1. GAF Topcoat MB Plus
 - 2. Johns Manville TopGard 5000
 - 3. Tamko Tam-Star White Elastomeric Coating
 - 4. CertainTeed FlintCoat-W
- I. Flashing Cement
 - 1. Johns Manville MBR two-part Flashing Cement or Type III Steep Asphalt (or equivalent by GAF, Tamko, or CertainTeed).
- J. Warrantable Penetration Seal, Penetration Flashing, and Low Flashing Materials
 - 1. M-weld Roofing Systems-Building Solutions, "M-Curb System" penetration seal system.
 - 2. Kemco, "Kemperol BR" penetration flashing and low flashing system.
 - 3. Johns Manville, "PermaFlash" penetration flashing and low flashing system.
 - 4. Triflex, "Triflex D" penetration flashing and low flashing system.
 - 5. Applied Liquid Technologies, "Protec" penetration flashing and low flashing system.
 - 6. Approved Equal
- K. Elastomeric Cement

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1. Tremco Manufacturing Co. "Poly roof".
2. Durok Bldg. Materials "Durok Rubber Cement".
3. Karnak Chemical Corp. "AR Elastomeric".

L. Perlite Cant Strip

1. GAF
2. Johns Manville
3. Atlas

M. Premanufactured Expansion Joint Flashing at Wall and Roof Expansion Joint

1. Johns Manville

2.02 MATERIALS FOR VAPOR BARRIER

A. Asphalt Vapor Barrier over Concrete Deck or Existing Asphalt Vapor Barrier, and concrete fill/screed

1. Primer: Asphalt primer, ASTM D41.
2. Steep Asphalt: ASTM D 312, Type III.
3. Asphalt Fiberglass Felt: Asphalt impregnated glass mat, ASTM D 2178, type VI. UL Classified.

B. Asphalt Vapor Barrier over Steel Deck

1. Underlayment Board: Perlite mineral insulation board, 3/4" thick, ASTM C728. UL Classified.
2. Steep Asphalt: ASTM D 312, Type III.
3. Asphalt Fiberglass Felt: Asphalt impregnated glass mat, ASTM D2178, Type VI. UL Classified.

2.03 MATERIALS FOR BUILT-UP MEMBRANE

A. Mineral Surfaced Asphalt Membrane

1. Steep Asphalt (Slopes 1/2" to 3" per Foot): 190°, Type III.
2. Special Steep Asphalt: 220°, Type IV (slopes 3" to 6" per Foot).

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3. Asphalt Fiberglass Felt: Asphalt impregnated glass mat, ASTM D 2178, Type VI. UL Classified.
4. Mineral-Surfaced Modified Bitumen Cap Sheet: Reinforced modified Bitumen Cap Sheet, ASTM D6163 or D6164, Type II, that incorporates the properties of both a strong fiberglass or polyester mat with an elastomeric base material consisting of modified bitumen material and fire retardant additives. UL Classified.

2.04 COMPOSITION FLASHINGS

A. Built-Up Base Flashing

1. Asphalt Fiberglass Felt: Asphalt impregnated glass mat, ASTM D 2178, Type VI. UL Classified.
2. Reinforced Modified Cap Sheet: Reinforced modified Bitumen flashing, ASTM D6163 or D6164, Type II, that incorporates the properties of both a strong fiberglass or polyester mat with an elastomeric base material consisting of modified bitumen material and fire retardant additives. UL Classified.
3. Steep Asphalt: 190°, ASTM D312 Type III.
4. Modified Flashing Cement.

B. Coverstrips

1. Asphalt Fiberglass Felt: Asphalt impregnated glass mat, ASTM D 2178, Type VI. UL Classified.
2. Reinforced Modified Cap Sheet: Reinforced modified Bitumen flashing, ASTM D6163 or D6164, Type II.
3. Plastic Cement: Flashing grade, fibrated asphalt roofing cement, ASTM D 4586. UL Classified.
4. Modified Flashing Cement

2.05 INSULATION

- A. Insulation must be compatible with the membrane manufacturer for use with the specified roof system.
1. Provide type and thickness of insulation as indicated on the Drawings. Isocyanurate insulation shall have a 15 year time weighted average Long

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Term Thermal Resistance (LTTR) value of at least 6 for each inch of insulation thickness, as determined in accordance with ASTM C1289 or CAN/ULC-S770 (Standard Test Method for Determination of Long Term Thermal Resistance of Closed Cell Thermal Insulating Foams). Perlite and fiberboard shall have an R-value of at least 1.3 for 1/2" thickness.

2. Types

- a. Isocyanurate - ASTM C 1289, Type II, Class 1, Grade 2
- b. Perlite - ASTM C 728
- c. Fiberboard - ASTM C 208

3. All insulation: Factory Mutual, Class 1 or U.L. Class A.

B. Rigid Insulation

Provide insulation using one of the assemblies described below in subparagraph 1. or subparagraph 2.

1. Three Layers of Insulation:

Three layers of insulation consisting of two layers of isocyanurate insulation, and a top layer of fiberboard or perlite insulation.

- a. Isocyanurate Insulation: Closed cell isocyanurate foam core skinned on both sides with factory applied facers of the generic type recommended by the membrane manufacturer. ASTM C 1289, Type II, Class 1, Grade 2. UL Classified. Thickness of bottom layer shall be 2". Thickness of second layer shall be not less than 1.5" and not more than 2". Board size 48"x48" maximum.
- b. Top layer: 1/2" thick minimum perlite board insulation complying with Federal Specification HH-1-529b, ASTM C728 and UL Classified.

Provide additional layers of isocyanurate insulation where required to meet indicated thermal insulating values, subject to approval of the membrane manufacturer and the Commissioner. Total

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thickness of insulation shall be as indicated on the Drawings.

2. Two Layers of Insulation:

Two layers of insulation consisting of one layer of isocyanurate insulation, and a top layer of composite insulation. Board size 48"x48" maximum.

a. Base layer: Closed cell isocyanurate foam core skinned on both sides with factory applied facers of the generic type recommended by the membrane manufacturer. ASTM C 1289, Type II, Class 1, Grade 2. UL Classified. Thickness 2".

b. Top layer: A layer of isocyanurate foam integrally bonded to a layer of perlite or wood fiberboard on one side and a nonasphaltic fiberglass mat on the other. Total thickness of top layer 1.5" minimum, 2.5" maximum.

Provide additional layers of isocyanurate insulation where required to meet indicated thermal insulating values, subject to approval of the membrane manufacturer and the Commissioner. Total thickness of insulation shall be as indicated on the Drawings.

2.06 FASTENERS

A. Fasteners for Securing Vent Base Sheet to Concrete deck, Precast Concrete Plank

Corrosion-resistant fastener such as Olympic Heavy Duty Deck Screw or Drive-pin fastener through 3" diameter sheet metal disk.

B. Fasteners For Securing Roofing Membrane To Wood Nailers

Annular ring roofing nail with one-inch solid cap, "Cap Nail" as manufactured by Simplex Nails Inc., Americus, Georgia, or approved equal.

C. Fasteners for Securing Built-Up Base Flashing

1. Concrete and Masonry Surfaces: Hardened, masonry drive pin, thru one inch dia. sheet metal disk.

2.07 MISCELLANEOUS MATERIALS

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A. Cant Strips (For built-up base Flashings)

Preformed fiberboard, ASTM C208.

B. Tapered Edgestrips (around drains and at other areas where insulation must be feathered down)

Preformed fiberboard, ASTM C208.

C. Materials for Penetration Seals, Penetration Flashing, Low Flashing, and Pitch Pockets

1. Warrantable penetration seals, penetration flashing, and low flashing shall be of materials described in subparagraph a., b., c., d. or e., below, as deemed appropriate by the roofing manufacturer and shall be included in their 20-year warranty. Verify with roofing manufacturer which system is appropriate for the proposed application and is included in the warranty. Provide primers, mineral granule surfaced target patches, catalysts, and other auxiliary materials to complete each system in accordance with requirements of the seal and flashing system manufacturer and the roofing system manufacturer.

a. Warrantable penetration seal: M-Curb System, consisting of a preformed structural urethane outer shell filled with a two-part urethane rubber sealant such as M-Thane. A structural high viscosity urethane adhesive such as M-Bond shall be used to bond the shell to the roof deck as well as seal the edges.

b. Warrantable penetration flashing and low flashing: Kemporol BR system, consisting of polyester fleece-reinforced two-component polyester resin membrane.

c. Warrantable penetration flashing and low flashing: Johns Manville PermaFlash system, consisting of polyester fabric-reinforced two-part asphalt modified urethane flashing membrane.

d. Warrantable penetration flashing and low flashing: Triflex D system, consisting of polyester fleece-reinforced two-component polyester resin membrane.

e. Warrantable penetration flashing and low flashing: Applied Liquid Technologies Protec

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system, consisting of glass fiber fabric reinforced two-component polyester resin membrane.

2. Traditional Pitch Pocket

Provide traditional pitch pocket only where specifically indicated as such in the contract documents. At other penetrations provide warrantable penetration seals or warrantable penetration flashing.

a. Mortar: ASTM C 270, Type S.

b. Elastomeric Cement: Non-sag, cold applied, trowel grade, single or two-component rubber elastomer. Minimum elongation 400 percent.

D. Termination Bar

1. One-inch wide by 1/4" thick Type 316 stainless steel bar used for low flashing detail.

E. Premanufactured expansion joint flashing at wall and roof expansion joint

1. Flexible, exterior weatherproof cover, factory manufactured combination of 60-mil neoprene membrane bonded to .018 Type 316 stainless steel.

2. Provide factory fabricated corners and T's for all intersections.

PART 3 - EXECUTION

3.01 VERIFICATIONS OF CONDITIONS

A. Testing Existing Roof Drains and Conductor Pipes

Before commencing with the Work, water test all existing drains and conductor pipes, submit a written report to the Commissioner, indicating which drains or conductors, if any, are not functioning properly.

3.02 REMOVALS

A. Remove all existing roofing, including, but not limited to, felts, asphalt, coal tar, and vapor barrier, down to sound, clean screed coat/concrete deck, as well as vertical surfaces to which flashing will be adhered or which will be caulked.

3.03 EXAMINATION

- A. Verify that Work of other trades which penetrates the roof deck or requires personnel and equipment to traverse the roof deck has been completed.
- B. Examine surfaces for inadequate anchorage, foreign material, moisture, and unevenness that would prevent the execution, and quality of application, of the built-up roofing system as specified.
- C. Do not proceed with application of built-up roofing system until defects are corrected.

3.04 PREPARATION

- A. Repair of fill/screed or concrete deck.
- B. Moisture Testing for Roof Deck
 - 1. All roof decks where roofing is to be installed shall be thoroughly dried out and free of moisture before installing new membrane. There shall be two (2) test areas for every 2500 square feet of area to be roofed.

The Commissioner shall be present at these tests. The Contractor shall submit a signed statement that the tests have been performed and list the test results for each area.

- a. Roof Deck Dryness Test (NRCA Approved Method)
 - 1) Use approximately one pint of bitumen that is specified for use in the roof membrane, heated to a temperature that will ensure an application temperature of 400°F. See Built-up Roofing, Section IV-B, (Equiviscous Temperature) NRCA roofing and waterproofing manual.
 - 2) Pour the bitumen on the surface of the deck. If the bitumen foams, the deck is NOT dry enough to roof.
 - 3) After the bitumen has cooled, an attempt should be made to strip the bitumen from the deck surface. If the bitumen strips clean from the deck, the deck is NOT dry enough to roof.

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- 4) If the tests prove the deck is damp, it shall be allowed to dry and be retested until dry enough for the roofing to be installed. Depending on the severity of the moisture condition, the Commissioner may permit the installation of vented base sheet in lieu of one ply of vapor barrier.

C. Priming (for concrete decks)

Prior to application of vapor barrier, and after the deck has passed the dryness test, apply asphalt primer to concrete deck surface at the rate of one gallon per square.

3.05 HEATING BITUMEN

A. Preparation

1. Use separate kettles or tankers for heating different types of asphalt.
2. The heating process shall be strictly regulated by means of an automatic thermostatic control of an approved type for positive temperature control. Kettles or tankers shall be the immersion tube type, fire by Liquid LP gas, and shall have 100% safety shutoff.
3. Equip each kettle or tanker with a recording thermometer that will graphically indicate and record on a chart the maximum and minimum temperatures to which materials have been heated. Recording thermometers shall be capable of accurately recording temperatures as high as 600°F and as low as 0°F. The thermometers shall be properly maintained at all times. Kettles or tankers without recording thermometers in good working condition shall not be used. At the end of each working day, turn the chart from the thermometer on each kettle or tanker over to the Commissioner. If any bitumen is overheated, remove it from the site in the presence of the Commissioner.

If any underheated or overheated bitumen has been applied on the roof, remove that portion of the roof.

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4. Preferred location for locating and heating the kettle is to place on the ground, with the asphalt pumped to the roof. If kettle must be placed on the roof, place kettle on a heavy sheet metal tray on dunnage. Metal tray shall extend 18" beyond the sides and ends of the kettle and be turned up 1" at all edges. Verify deck construction. Kettle shall not be placed on thin plank or steel roof deck construction.
 - a. Only one gas cylinder shall be on the roof at any one time. Locate the cylinder at least four feet away from the kettle. Vertically brace the cylinder and shade it from the sun.
 - b. Provide fire extinguishers on the roof in the vicinity of the kettles as required to ensure the safety of the roof.

B. Heating Asphalt Bitumen

1. Heat the bitumen in accordance with the Equiviscous Temperature information furnished by the bitumen manufacturer for that specific run of bitumen.
 - a. In no case shall be asphalt be heated to or above the actual COC Flash Point (ANSI/ASTM D92); or the finished blowing temperature for more than 4 hours.
 - b. Maintain the temperature of the bitumen at the point of application within the Equiviscous Temperature Range. Use insulated pipes, buckets, luggers, and other insulated roofers equipment as required by the field conditions.

Contractor must have at least one hand held thermometer for each crew installing hot asphalt in order to ensure compliance with EVT.
2. Application temperature: The accepted application temperature range for asphalt is the equiviscous temperature, (EVT) 925°F. All felt installation must occur in this range to be acceptable.

3.06 MIXING FLASHING CEMENT

- A. Mix flashing cement components in accordance with printed instructions of the manufacturer.
- B. Johns Manville MBR Two Part Flashing Cement

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1. Store activator, and mix materials at temperatures stated in the manufacturer's instructions. After mixing, pot life time varies with ambient temperature, and must not be exceeded.
2. Utilize the specific mechanical mixing equipment and method of mixing required by the manufacturer. Do not exceed mixing time of three minutes, or as otherwise stated in the manufacturer's instructions.

3.07 INSTALLING VAPOR BARRIER

- A. Installing Vapor Barrier over Concrete Deck, Existing Vapor Barrier or Lightweight Fill/Screed
 1. Install 2 plies of asphalt fiberglass felt shingle fashion. Lap plies 19" over each preceding ply.
 2. Embed each ply in a solid mopping of hot steep asphalt applied at the rate of 20 lbs per square. Broom in each ply for complete embedment.
- B. Extend the vapor barrier beyond all edges and openings of the roof so that it can be turned up over the insulation a minimum of 6".
 1. If vapor barrier is punctured, repair immediately with fiberglass felt embedded in hot bitumen.
 2. Install the insulation and roofing membrane immediately (same day) as the vapor barrier is installed. Where not possible, protect the vapor barrier with a glaze coat of hot bitumen applied at the rate of 15 lbs per square.

3.08 INSTALLING VENT BASE SHEET AND VAPOR BARRIER

- A. When directed by the Commissioner after results of the moisture test or when shown on Drawings, install one ply of vent base sheet followed by a vapor barrier of Type VI felt. Vent sheets shall be butted.
- B. Using vent base sheet, start at the low edge of the roof. Fasten along the lap of the ply at intervals not to exceed 9" and stagger-nail down 11" apart with fasteners spaced at approximately 18" o.c. stagger. Provide additional fasteners spaced as required to meet specified wind uplift resistance rating. Prior to installation, have pullout tests performed by the fastener manufacturer to determine the appropriate fastener. All drilling is

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to be done using a high-speed rotary percussion drill with three-jaw chuck.

- C. Run vent base sheet up the perimeter or parapet walls to the height of the counter flashing, mechanically fastening at spacing indicated above. This will allow for proper perimeter venting detail.
- D. Stop vent base sheet short by 2'-0" at all drains and penetrations. Seal the edges with a 6" strip of Type VI felt set in steep asphalt or flashing cement.
- E. Install one ply of asphalt fiberglass felt with 2" overlap on sides and 6" end laps. Embed each ply in a solid mopping of Type III hot steep asphalt applied at the rate of 20 lbs per square. Broom ply for complete embedment.

3.09 INSTALLING INSULATION

A. Installing layers of insulation:

- 1. Install layers of insulation under area of roofing to achieve required thickness. Install the insulation in separate layers with the long joints of each layer running in the same direction in a continuous straight line perpendicular to the direction of the roof membrane. Stagger end joints between rows. Butt edges and ends snugly. "Occasional" joint widths up to 1/8" will be allowed.
- 2. Install the layers of insulation with joints of each succeeding layer staggered from the joints of the previous layer a minimum of 6" in each direction.
- 3. Set each layer of insulation in a full solid hot mopping of Type III steep asphalt applied at the rate of 30 lbs per square. Press the insulation into the bitumen to a firm and uniform bearing.

B. Keep insulation absolutely dry at all times. Discard insulation that contains moisture.

- 1. Install only as much insulation as can be covered with roofing membrane the same day.
- 2. Discard all units with broken corners or similar defects.

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3. At roof drains, terminate the insulation with tapered edge strips so that all flashing and coverstrip joint laps can be made within the tapered portion.
 4. Set all cant strips in a solid application of hot bitumen so they are firmly anchored to the deck and the vertical surface.
- C. Installation of insulation shall be in strict compliance with the Manufacturer's recommendations.

3.10 INSTALLING BUILT-UP ROOF

- A. Before application of roof membrane, turn vapor barrier over insulation at all edges and openings and embed in a full hot application of bitumen. At round openings, seal the edges of the insulation with a trowel coat of plastic roof cement.
- B. Installing Built-Up Roof Membrane
1. For asphalt built-up roofs, provide built-up roof membrane consisting of 4 plies of asphalt fiberglass felt. Embed each ply in solid mopping of hot asphalt applied at the rate of 25 lbs per square.
 2. Where mineral-surfaced built-up roof is indicated on the Drawings, provide built-up roof membrane consisting of 3 plies of asphalt fiberglass felt and one ply of mineral-surfaced modified bitumen cap sheet. Embed each ply in solid moppings of hot asphalt applied at the rate of 25 lbs per square.
- C. Requirements for Back Nailing Felts (if slopes 1/2" per foot and greater)
1. Back Nailing: On roof slopes 1/2" per foot or more, back nailing of the felts may be required by the roofing membrane manufacturer.
 - a. Back nail the felts when required by the manufacturer.
 - b. Back nail the felts in strict accordance with the manufacturer's Specification for nailing pattern, and nail spacing.
 2. For Insulated Decks:

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Wood Nailers: Nominal 4" wide wood nailers, the same thickness as the insulation, are required on all slopes requiring back nailing.

- a. Install the wood nailers at and parallel to, ridges, hips, and eaves. Between ridges and eaves, install nailers perpendicular or parallel to the roof slope, as required by the manufacturer.
- b. Space the nailers in strict accordance with the manufacturer's Specifications.

D. Laying Felt

1. Start laying felts, using split sheets as necessary to secure the required number of plies and laps. Provide 10" minimum end laps. Roll all roofing felt not more than 5'-0" behind the mop as it spreads the bitumen, brooming and pressing the felts into the bitumen from the center outward to the edges so as to ensure thorough sticking and a smooth, firm surface, free of blisters, wrinkles, or buckles.
2. Use three persons for the application of roofing felt as follows; one person to spread bitumen in front of the roll, one person to roll out the felt and one person to smooth out the felt with a stiff street broom or squeegee. The roofing may be installed with an approved applying machine and broomed or squeegeed smooth producing an equivalent result. In no case shall the felt be rolled out dry and then laid in the bitumen.
3. Direction of Felt Run (on Slopes of 1/2" per foot and greater):

Install the felts perpendicular to the wood nailers.
4. Where built-up flashings are required, extend the mopped roofing felts 2" beyond the top edge of the cant.
5. Where sheet metal base flashings are required, turn up mopped roofing felts a minimum of 4" on all vertical surfaces or apply additional felt plies.
6. Where cant type gravel stops (fascia) are required, carry all membrane plies past the edge of the water

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dam member and cut off flush with the face of the cant and seal the top with modified flashing cement.

7. Any protection ply or temporary ply shall not be deemed a part of the 4-ply system.

E. Phasing of Roofing Membrane Installation

1. Phasing of ply felt application will not be allowed in any case.
2. Where necessitated by job conditions and with approval of the Commissioner, a protective glaze coating may be applied as follows:
 - a. Apply protective glaze coatings in addition to all other coatings or moppings specified in this Section. Reduction or omission of specified prime coats, mopped bitumen, flood coats or finish coats in lieu of glaze coatings is not permitted.
3. All exposed felts, regardless of type, must be protected with specified surfacing or glaze coating by the end of each working day.
4. Continue the installation of roofing materials on the following work day (weather permitting). Glaze coated surfaces must be clean and dry to ensure complete bonding of felts or coatings.

F. Temporary Flashings

Provide a temporary waterproof seal at all membrane edges, penetrations, drains, etc. Unless complete flashings are installed immediately (same working day) following the membrane application.

G. Installing Built-Up Flashings

1. Apply asphalt primer to all vertical surfaces before application of built-up flashings.
2. Install built-up flashing consisting of 2 plies of asphalt fiberglass felt, topped with one ply of modified bitumen flashing membrane.
3. Cut all felts into strips not longer than 12 feet. Provide 3" minimum end laps. Stagger all end laps. Cut modified bitumen flashing membrane the width of the roll.

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4. Install all plies in hot steep asphalt or if desired install felt in plastic cement, and modified flashing in MBR adhesive.
5. Fasten the top edge of the built-up flashings 8" oc.
6. At low flashing locations, install a termination bar fastened the top edge of the built-up flashings at 8" oc and seal with MBR flashing cement.
7. Seal top edge of flashing with a trowel coat of plastic cement and fabric. If roof system is vented, do not permanently seal the top edge of the vent base sheet. Prior to installation of final cap flashing, temporarily protect juncture to prevent water from getting behind the vent base system.
8. Where indicated, provide premanufactured expansion joint covers in accordance with the Drawings and the manufacturer's recommendations.

H. Installing Metal Flashings and Coverstrips

1. Asphalt Roofs: Plastic Asphalt Cement.
2. Prime metal surfaces and embed portions of all metal flashing which extend over the roof surface in plastic cement.
3. Completely cover all portions of metal flashings which extend over the roof surface with coverstrips consisting of a modified bitumen membrane over asphalt fiberglass felt, each set in plastic cement. Provide strips that are at least 8" and 12" wide respectively. In all cases, carry the strips past the edge of the metal flange and beyond the edge of the preceding felt 4" min. Seal junction of metal and coverstrip with plastic cement. Seal all edges and seams of the modified membrane with modified flashing cement.

Coat and surface the top ply to match the adjacent roofing membrane.

4. At roof drains, install cover strips within the slope to the drain so that they do not impede the flow of water from the roof.

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I. Installing Warrantable Penetration Seals, Penetration Flashing, and Low Flashing

Provide seals or flashing at penetrations of the roof membrane as required for a watertight roof system, and as indicated on the Drawings, and as approved by the roof system manufacturer for inclusion in the roofing warranty.

Bonding surfaces to which the seal or flashing are to be placed shall be clean and free of moisture, dirt, grease, oil, loose material, foreign material, and debris.

Substrate surfaces shall be prepared and primed per manufacturer's instructions. Abrade and grind surfaces and clean metal surfaces to bare metal when recommended by the manufacturer. Follow manufacturers' recommendations for required temperature of substrate and materials, and for filling of voids. Provide bead of resin or other sealing material at terminations of the system as recommended by the manufacturer.

1. M-curb System

- a. For roofs without granular cap sheet, provide target patch of mineral granule surfaced modified bitumen cap sheet, in solid mopping of hot asphalt, and as required by the roofing system and curb system manufacturers. Granule surfaced cap sheet shall have all loose granules removed from the surface by vacuuming and power brooming.
- b. Set the urethane shell in the structural adhesive. Seal the edge of the shell and membrane with adhesive.
- c. Fill the urethane shell with the pourable sealer to the top, ensuring that no ponding will occur.

2. Kemperol BR System

- a. For roofs without granular cap sheet provide target patch of mineral granule surfaced modified bitumen cap sheet, in solid mopping of hot asphalt, and as required by the roofing system and flashing system manufacturers. Granule surfaced cap sheet shall have all loose granules removed from the surface by vacuuming and power brooming.

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- b. Cut fleece reinforcement to required dimension and shapes required to ensure fleece will be flat against surfaces.
 - c. Brush resin to all surfaces and roll into fleece. Add additional material to ensure complete saturation. Total dry film thickness of membrane 70 to 80 mils minimum as recommended by manufacturer.
3. PermaFlash System
- a. Lay out reinforcement fabric around penetration and cut to fit. Fabric shall wrap around penetration and bridge all vertical to horizontal transitions.
 - b. Mix Johns Manville two part MBR Flashing Cement in accordance with the manufacturer's instructions, and as described in this specification Section. Apply fluid-applied flashing directly to prepared substrate. Adhere fabric by pressing into the fluid-applied flashing while still wet. Completely cover fabric with at least 60 mil coat wet film thickness of fluid-applied flashing, and as required by the manufacturer.
4. Triflex D System
- a. For roofs without granular cap sheet provide target patch of mineral granule surfaced modified bitumen cap sheet, in solid mopping of hot asphalt, and as required by the roofing system and flashing system manufacturers. Granule surfaced cap sheet shall have all loose granules removed from the surface by vacuuming and power brooming.
 - b. Cut fleece reinforcement to required dimension and shapes required to ensure fleece will be flat against surfaces.
 - c. Apply an even base layer of resin; work fleece reinforcement into the wet resin, removing trapped air, using roller; apply an even topcoat of resin wet-on-wet to ensure full saturation of the fleece reinforcement. Finished dry film membrane thickness 70 to 80 mils minimum, as recommended by manufacturer.
5. Protec system

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- a. For roofs without granular cap sheet provide target patch of mineral granule surfaced modified bitumen cap sheet, in solid mopping of hot asphalt, and as required by the roofing system and flashing system manufacturers. Granule surfaced cap sheet shall have all loose granules removed from the surface by vacuuming and power brooming.
- b. Cut fabric reinforcement to required dimension and shapes required to ensure reinforcement will be flat against surfaces.
- c. Apply resin evenly to substrate. Install fabric reinforcement directly into the resin avoiding any folds and wrinkles. Work the resin into the fabric, saturating it. Apply resin evenly to top surface of fabric. Fabric shall be completely saturated with resin. Total dry film thickness of membrane 70 to 80 mils minimum, as recommended by manufacturer.

J. Filling Traditional Pitch Pockets

Fill bottom half of pitch pocket with cement mortar. Fill remaining half of pitch pocket with elastomeric cement. Slope surface to shed water.

K. Applying Reflective Elastomeric Coating (where roof with mineral cap sheet is indicated on the Drawings)

1. Provide coating on roofs with mineral surface cap sheet and on adjacent base flashings.
2. Allow underlying materials to cure for period of time recommended by the coating manufacturer.
3. Prepare substrate and apply base coat or primer as recommended by the manufacturer.
4. Apply reflective elastomeric coating as recommended by the manufacturer, and as required for EPA "Energy Star" qualification. Follow manufacturer's instructions for environmental conditions, number of coats, time in between coats, coverage, and other application requirements.
5. Areas that are inaccessible beneath mechanical equipment are not required to be coated.

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3.11 FLOOD TESTING

- A. After completion of roofing work specified above, all drains shall be plugged and all roofs of above locations of Work shall be flooded with a minimum of 1" of water above the high points. Water shall remain for a minimum of 24 hours. If leaks occur, Contractor shall do all necessary work to correct them and flood testing shall be repeated until no leaks occur. Where roofing work is limited to areas immediately adjacent to parapets or other partial roof replacement areas, the flood test shall include the area of new work and extend at least an additional 4 feet past the transition to the existing membrane.
- B. Water test all existing drains and conductor pipes. Any drains or pipes found to be clogged or pipes found to be leaking, other than those found during the pre-construction testing that were not directed to be repaired, shall be repaired/replaced at the Contractor's expense.

3.12 FIELD QUALITY CONTROL

A. Field Samples

Draw a quart sample from each load of bitumen arriving at the job site in the presence of the Commissioner, who will take it for laboratory analysis.

B. Test Strip (if requested by the City of New York)

1. When and where directed by the Commissioner, and before surfacing is applied to the completed membrane, cut a strip 3" wide by 40" long thru all plies of the built-up roofing. Number of such test strips may be as required by the Commissioner. After removal of the strip, immediately repair the area by applying the same number of plies of the same kind of felt and bitumen to fill the hole level. Repeat the same number of plies of the same kind of felt and bitumen over the filled strip with the first ply lapping each edge 12" and each succeeding ply lapping the preceding ply by at least 3" on all edges. Apply surfacing material to match the adjoining roof. Turn the test strips over to the Commissioner for examination.
2. If the test strips indicate the roofing system complies with the Specifications, the City of New York will bear the cost of the test strip Work.

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3. If the strips indicate the roofing system does not comply with the Specifications, the Contractor shall bear the cost of the test strip Work, and shall repair or replace all roofing Work as required to comply with the Specifications, at the Contractor's expense.

C. Non-Compliance

1. Failure of the bitumen samples or the test strip samples to meet the Specification requirements will be cause for rejection of the Work.

3.13 SOLAR REFLECTANCE FIELD TEST

- A. After installation of the aggregate surfacing an independent testing laboratory retained by the Contractor shall conduct solar reflectance tests of the completed roof. The laboratory shall be subject to approval by the Commissioner.
- B. Testing shall be by ASTM test method E903, E1918, or C1549. The roof area shall be divided into sections of 1000 square feet each, and test measurements shall be performed in the center of each section or as directed by the Commissioner. Three repetitions shall be made of each measurement. Testing shall be performed on a clear day, between the hours of 11:00 AM and 2:00 PM, when there are no clouds or other obstructions in the field of view.
- C. If initial testing indicates areas with less than 30% solar reflectance the contractor shall remove and replace the gravel in those areas with gravel that complies with the 30% requirement, at no additional cost to the City of New York, and retest.
- D. Submit a final test report, prepared and certified by the testing laboratory, certifying that the installed aggregate surfacing conforms to specified requirements for solar reflectance of not less than 30%.

3.14 INSPECTION

- A. After all roofing system Work is completed, an inspection shall be made by the roofing system manufacturer's representative (Company Field Advisor). The representative shall certify that roofing system has been installed according to the Specifications.

3.15 CLEANING

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- A. Remove bitumen from surfaces other than those requiring bituminous coatings.
- B. Remove all debris from roof area.

END OF SECTION

SECTION 076100
FLASHING AND SHEET METAL

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide all flashing, trim and sheet metal Work as indicated on the Drawings, as required for the completed Work, and as specified herein. The Work shall include, but shall not be limited to, the following:
1. Roof Flashings (various types)
 2. Wall Flashings (various types)
 3. Shop-Formed Copings
 4. Flashing at expansion joints
 5. Flashing at roof mounted equipment and roof penetrations.

1.02 REFERENCES

- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.
- B. Sheet Metal and Air Conditioning Contractors National Association (SMACNA).
- C. Copper Development Association (CDA).
- D. American Society for Testing and Materials (ASTM).
- E. Federal Specifications (FS).

1.03 SUBMITTALS

- A. Shop Drawings
1. Show the manner of forming, jointing, and securing the metal flashings, trim, and other specified sheet metal items. Include expansion joint connections, and the method of forming waterproof connections to adjoining construction.
- B. Product Data

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1. Catalog sheets, specifications, installation instructions for each item specified except for shop or job formed items, solder and flux.

C. Samples

1. Materials for Flashings: One 6" sq piece, for each type material specified.
2. Anchors: Two, each type required.
3. Cap Flashings: Full section, 6" long.
4. Coping: Full section, 12" long.
5. Termination bar, 12" section. Termination bar fasteners, stainless steel, 3 of each type. Termination bar sealant, 1 container.

D. Guarantee

E. Certificates of qualifications as specified under Article titled "Quality Assurance".

F. Product Certificates

Certify that materials of this Section, such as copper/fabric flashing, sealants, termination bar, and fasteners, are compatible with all components of the air barrier system and other Project materials that contact them.

1.04 QUALITY ASSURANCE

A. Except as otherwise shown or specified, comply with applicable recommendations, details, and standards of CDA, and SMACNA.

B. All metal Work shall be ink-stamped at intervals, identifying

Manufacturer, type metal, and gage or thickness.

C. Manufacturer's Recommendations

For factory fabricated items, follow the manufacturer's recommendations and installation instructions unless specifically shown or specified otherwise.

D. Materials containing asbestos are prohibited.

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1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products of this Section in such manner to protect them from damage.

1.06 PROJECT CONDITIONS

- A. Do not execute the Work of this Section unless the Commissioner is present, unless otherwise directed.
- B. Make the roof and all uncompleted flashings watertight at the end of each work day.

1.07 GUARANTEE

- A. The Contractor shall provide a two (2) year written guarantee, covering the flashing and sheet metal materials and workmanship. Should any defects occur during the stated period, they shall be corrected immediately, and all damage caused by such defects shall be corrected; all corrective Work shall be at the Contractor's expense.

PART 2 - PRODUCTS

2.01 MATERIALS FOR FLASHING FABRICATION

- A. Plain Copper Sheet: Cold rolled copper, ASTM B 370.
- B. Lead Coated copper Sheet: Cold rolled copper, ASTM B 370. Lead coating; ASTM B101, Type 1 weighing 0.06 to 0.07 lbs per sq ft applied to each side.
- C. Stainless steel Sheet: Dead soft fully annealed stainless steel sheet, ASTM A240, Type 316, sulfur content .005 or less, 2D dull finish.

2.02 MANUFACTURED MATERIALS

- A. Copper/fabric flashing: consisting of a full sheet of copper, weight of copper core not less than 5 ounces per square foot, permanently bonded with rubber based adhesive to and between 2 layers of fiberglass fabric. Each layer of fiberglass fabric shall be 0.3 oz. per sq. ft. minimum weight, with minimum 10x20 threads per inch. Flashing shall be compatible with air barrier system, sealants, adhesives, and other adjacent materials.

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1. Manufacturers / Products
 - a. York Manufacturing, Inc., Sanford, Maine: Multi-Flash 500 Copper Fabric Flashing.
 - b. Advanced Building Products Inc., Springvale Maine: Copper Sealtite 2000.
 - c. Sandell Manufacturing Company, Schenectady, NY: Sandell Copper Fabric Flashing NA.
 - d. Or approved equal.

2.03 FASTENERS

- A. Nails: "Stronghold" type large flat head roofing nail.
 1. For Copper: Hardened copper.
 2. For Stainless Steel: Stainless steel.
- B. Screws, Bolts, and other Fastening Accessories
 1. For Copper: Copper or brass.
 2. For Stainless Steel: Stainless steel type 316.
- C. Anchors: Provide one of the following types:
 1. Hammer driven anchors, consisting of a stainless steel drive pin and a corrosion resistant metal expansion shield inserted thru a stainless steel disc with an EPDM sealing washer.
 2. Self-tapping, corrosion resistant, concrete and masonry screw inserted thru a stainless steel disc with an EPDM sealing washer.
- D. Fasteners for Through-Wall Flashing Termination Bar
 1. Tapcon Concrete Screw: stainless steel.

2.04 MISCELLANEOUS MATERIALS

- A. Solder: Composition of block tin/pig lead of proportion recommended by the metal manufacturer, stamped either 50/50 or 60/40 "Warranted".
- B. Flux: Paste or acid type as recommended by the metal manufacturer.
- C. Bituminous Coating: FS TT-C494.
- D. Type 3 Sealant (For concealed sealant joints of thru-wall cap receivers and other areas which require concealed sealant).

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One part butyl rubber sealant; Pecora BC-158, PTI 707, or Woodmont chem-Calk 300.

- E. Termination Bar (For through wall copper/fabric flashing): Plastic. Provide material compatible with the air barrier system. York Manufacturing Co., Sanford, Maine.
- F. Flashing Sealants, Cements, Mastics, and Adhesives: Provide products recommended in writing by the flashing manufacturer, and compatible with all adjacent materials, including components of the air barrier system. Materials containing asbestos are prohibited.
 - 1. Where low modulus silicone sealant is indicated provide ASTM C 920, single-component, neutral-curing silicone; Class 100/50, Grade NS, Use NT, Use O.

2.05 FABRICATION

- A. General: Where practicable, form and fabricate sheet metal work in the factory or shop. Produce bends and profiles accurately to the indicated shapes. Where not indicated or specified, follow the applicable requirements of the reference standards listed in PART 1. Hem exposed sheet metal to eliminate all sharp edges and corners.
- B. Cap Flashing (one-piece)
 - 1. Copper: 16 oz.
 - 2. Lead Coated copper: 16 oz.
 - 3. Stainless Steel: 26 ga (0.018").
- C. Cap Flashing (two-piece) with In-Wall Cap Flashing Receivers. Provide same metals as in B., above. All corners of coping flashing and of cap receivers shall be factory prefabricated: mitered and lapped approximately 1" at corner, and fully soldered or welded.
 - 1. Cap Flashing: Three way mortar bond type receiver with snap fit cap flashing. Acceptable products: "Keystone Two-Piece cap Flashing" as manufactured by Keystone Flashing Co., Philadelphia, PA and "Cheney Prefabricated Snap Lock Cap Flashing" as manufactured by Cheney Flashing Co., Trenton, NJ., and or approved equal.

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D. Cap Flashing with Concrete Reglet (Same metals as in B., above).

1. Reglet with 45 degree slot, and snap fit cap flashing. Hooked edge of cap flashing shall lock into reglet. Acceptable products: "Cheney Type-A Snap Lock Concrete Reglet"; and "Keystone Concrete Reglet".

E. Base Flashing

Note: This base flashing is not to be used for roofs; refer to Roofing Sections for roof base flashing.

1. Copper: 20 oz.
2. Lead Coated copper: 20 oz.
3. Stainless Steel: 24 ga (0.025").

F. Shop-Formed Coping

1. Copper: 20 oz.
2. Lead Coated Copper: 20 oz.
3. Stainless Steel: 24 ga (0.025").

G. Factory Fabricated Formed Coping

Complete system including 0.063" aluminum coping, anchor plates, joint drainage system, concealed joint covers and all other accessory components. "Permasnap Coping" as manufactured by W.P. Hickman Company, Asheville, NC; or "Snap-Lok Coping" as manufactured by MM Systems Corp, Tucker, GA.

1. Finish: Anodized; color: as selected by Commisioner.

H. Metal Expansion Joint Cover

1. Copper 20 oz.
2. Lead Coated Copper: 20 oz.
3. Stainless Steel 24 ga (0.025").

I. Roof Drain Flashing

1. Sheet lead, 6 lbs per sq. ft.

J. Pitch Pockets

1. Copper: 16 oz.
2. Lead Coated Copper: 16 oz.

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3. Stainless Steel: 26 ga (0.018").

K. Crickets

1. Copper: 16 oz.
2. Lead Coated Copper: 16 oz.

L. Sealant Edge Flashing

1. Stainless Steel: 26 gauge, hemmed edge.

M. Flashing at Cast Stone Window Sill

1. Stainless Steel: 26 gauge.

N. Gutters and Downspouts

1. Materials: Plain copper or lead coated copper.
2. Components
 - a. Hung Gutter: 20 oz.
 - b. Downspouts: 16 oz.
 - c. Conductor Heads: 16 oz.
 - d. Outlet Tube, offsets and elbows: 16 oz.
 - e. Continuous cleats: 20 oz.
 - f. Gutter Hanger Brackets: 1" x 3/16" brass or copper bar.
 - g. Gutter Braces: 1" x 1/8" brass or copper bar.
 - h. Gutter Stiffener: 3/4" x 1/8" brass or copper bar.
 - i. Downspout Support Hanger: 1" x 1/16" brass or copper.
 - j. Wire Strainers: 18 gage copper wire, 1/2" mesh.
3. Fabrication
 - a. Fabricate gutters, downspouts and fittings to shapes and profiles indicated on Drawings; if details are not indicated, follow applicable requirements of the Architectural Sheet Metal Manual of SMACNA.
 - b. Form gutters and downspouts in 10'-0" long sections.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Coordinate the work of this Section with other Work for the correct sequencing of items which make up the entire system of weatherproofing or waterproofing.

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3.02 PREPARATION

- A. Do not install the Work of this Section unless all necessary nailers, blocking and other supporting components have been provided.
- B. Do not install the Work of this Section unless all substrates are clean and dry. Do not cover air barrier membrane until the completion of a curing period if recommended by the membrane manufacturer.

3.03 INSTALLATION

A. Isolation

Separate dissimilar metals from each other with a dielectric coating to prevent galvanic action. Coating shall be bituminous or synthetic material as required for compatibility with adjacent materials.

B. Tinning and Soldering

- 1. Use soldering irons (heavy coppers) as Industry standard. Torch soldering is not acceptable.
- 2. Clean, flux and tin all surfaces to be soldered.
- 3. Sweat solder thoroughly into seams, completely filling the seam for the full width.
- 4. Upon completion of soldering, remove all traces of flux residue, and if required, apply a neutralizing wash followed by a clean water wash.

C. Installing In-Wall Cap Flashing Receivers

- 1. Set the flashing so there is mortar above and below the built-in portion. Bonding ribs shall be completely filled with mortar.
- 2. Do not mallet, bend or deform the exposed portion.
- 3. Lap all end joints so they interlock at the first raised rib. Apply Type 3 sealant between the mating surfaces of the built-in portion of the flashing before interlocking end joints.
- 4. All corners shall be factory prefabricated: mitered and lapped approximately 1" at corner, and fully soldered or welded by the manufacturer.

D. Installing Concrete Reglet

- 1. Furnish reglet for installation with formwork, complete with fasteners and filler.

E. Installing Cap Flashing

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1. Form and install the cap to provide a spring tight fit against the base flashing. Lap all end joints and base flashing a minimum of 3". Extend the cap continuously around corners or provide lock seams. Install waterstop flashing at expansion joints.
 2. Cap Flashing for Installation In Reglets:
 - a. Extend the cap flashing into the reglet, applying pressure to securely lock it into position along its entire length.
 - b. Pack the reglet with lead wool to within ¼" of the reglet opening, then fill with sealant and tool to a slightly concave surface.
 3. Surface Mounted Cap Flashing:
 - a. Form the top portion of the cap flashing which comes in contact with the wall surface with a 1" wide bearing surface. Form a 45 degree x 1/4" wide stiffener and calking flange along the top edge.
 - b. Apply Type 2 sealant on the back side of the bearing surface.
 - c. Secure the cap flashing to the wall with fasteners spaced 12" oc thru the bearing surface.
 - d. Apply Type 2 sealant along the calking flange.
 4. Cap flashing For Installation in Receivers: Insert the cap flashing into the receiver locking slot. Apply upward pressure along the entire length of the cap flashing so that it is securely locked into position.
 5. Pre-tin and solder with soldering irons (heavy coppers) all inside and outside corners.
 6. Where applicable, release existing soldered lap with soldering iron, install base flashing, dress down and re-solder existing lap.
- F. Dressing Down Existing Cap Flashing
1. Turn up all cap flashings as required to perform the Work. Upon completion of the Work, dress down all disturbed cap flashings so they lie flat against the base flashing.
 2. Secure the cap flashing to the wall surface with fasteners spaced 18" oc.

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3. Install matching metal patches at corners of cap flashings which have been cut to perform the Work. Lap the patches a minimum of 1" on each side of the cap flashing.
 - a. Secure the patch by pop-riveting or by soldering.

G. Installing Base Flashings

1. Form the base flashing with locked and soldered joints into lengths not more than 24'-0" oc.
2. Provide expansion joints a maximum of 24'-0" oc on straight runs and a maximum of 4' from corners. Form expansion joints with a 3" loose locked seam filled with Type 3 Sealant.
 - a. Expansion Joint: slit the cross folded portion of the flashing where it is bent at a right angle. Solder a patch over the slit to avoid binding at the cross fold.
3. Extend the vertical portion of the base flashing a minimum of 3" up behind the cap flashing.
 - a. Where shown on the Drawings, lock the base flashing to the cap flashing with a minimum 3/4" loose lock joint.
4. Extend the horizontal portion of the base flashing a minimum of 4" and terminate in a 1/2" folded edge. Secure with nails spaced 3" oc staggered.

H. Installing Formed Metal Coping

1. Form the coping into lengths not exceeding 8'-0".
2. Join coping sections with 1-1/2" loose locked seams filled with Type 3 sealant.
3. Hook the front and back edges of the coping over continuous metal edge strips. Nail the edge strip 6" oc.

I. Installing Factory Fabricated Formed Metal Coping

Install in accordance with the manufacturer's written instructions unless shown or specified otherwise.

J. Installing Expansion Joint Cover

1. Install combination edge strip and cap flashing over the base flashing. Secure the edge strip along

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the top of the curb and lap the base flashing a minimum of 3". Lap each individual length a minimum of 3".

2. Form the expansion joint cover with standing seam joints not to exceed 10'-0" oc.
3. Turn the edges of the cover over the edge strip. Allow clearance of one half the width of the expansion joint between all edges of cover and edge strip.

K. Reflashing Existing Drains

Remove the existing dome strainer, clamping ring and lead flashing from existing roof drains. Install 34" square lead flashing turned into drain body and reinstall clamping ring and strainer. If necessary, tap existing clamping ring bolt holes and install new clamping ring bolts.

L. Installing Pitch Pockets

1. Form the pitch pocket with 4" wide flashing flanges. Extend the pitch pocket a minimum of 3" above the roof membrane and a minimum of 1" beyond the roof penetration.
2. Solder all construction joints.

M. Installing manufactured copper/fiberglass fabric flashing.

1. Installation
 - a. All surfaces to receive the copper/fiberglass flashing shall be reasonably smooth, free from irregularities.
 - b. On horizontal masonry surfaces lay flashing in a fresh bed of mortar above and below. When recommended by the flashing manufacturer the flashing may be laid on a coat of recommended sealant, and with a fresh bed of mortar above the flashing. Spot vertical surfaces with mastic or other recommended material to hold flashing in place until masonry is set, and secure as detailed.
 - c. Install the flashing in continuous lengths with the minimum number of joints. Door and window flashing shall be installed in one continuous length from side to side.

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- d. At corners, beams, columns, and at other junctures, fit flashing to the proper contour.
 - e. Trim flashing to terminate flush with the exposed face of masonry wall, except at masonry indicated to have deeply raked joints, and as otherwise indicated.
 - f. Fold flashing at ends to form dams.
2. Spandrels: Start flashing cut flush with the outside face of the wall; go over the stainless steel sealant edge as shown on Drawings, adhered to sealant edge flashing with a full coat of low modulus silicone sealant. Go up inside the wall cavity as indicated on the Drawings. Then go thru the wall turning up on the inside face of the wall not less than 2", or provide a continuous termination bar as indicated on the Drawings to seal flashing to backup masonry or concrete after air barrier membrane is applied. Fasten bar to substrate 8" on center, with stainless steel fasteners anchored into pre-drilled pilot holes. Provide a continuous bead of low modulus silicone sealant along top of termination bar to completely seal the bar and flashing to the substrate. Confirm that all materials are compatible with the air barrier system.
 3. Heads: Start flashing covering the toe of lintel angle or as shown on the Drawings; go over the lintel on a full coat of low modulus silicone sealant. Go up inside the wall cavity as indicated on the Drawings. Then go thru the wall turning up at the inside not less than 2", or where indicated on the Drawings provide a continuous termination bar as specified for Spandrel flashing. Extend flashing at least 6" on each side of the opening. Turn flashing at the ends, forming a 2" deep pan running entirely thru the wall. All corners shall be folded, not cut.
 4. Joints: Lap joints at least 6", coating the contacting surfaces with mastic or other material recommended by flashing manufacturer.

N. Sealant Edge

Provide stainless steel sealant edge flashing on relieving angles as indicated on the Drawings. Form flashing as required to suit lipped brick or other configuration. Adhere to relieving angle with a full

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coat of low modulus silicone sealant. Seal joints with sealant. Edge shall be hemmed.

O. Flashing at Cast Stone Window Sill

Provide 26 gauge stainless steel flashing as indicated on the Drawings, on bed of mortar, and cover with mortar. Install in one continuous length from side to side. Provide end dams at least 2" high, fully soldered or welded, forming a pan.

P. Gutters and Downspouts

1. Connection to Existing Construction where applicable: Tie the items of Work in with the existing work to obtain watertight installation. Match the existing installation as much as practicable, unless otherwise specified. Repair and dress adjacent existing components as required to make secure and neat connections with new items.
2. Installation of Hung Gutters:
 - a. Install gutter hanger brackets 3'-0" oc. Install the brackets so there will be a slight pitch in the gutter towards the downspouts.
 - b. Join the gutter sections with 1" wide lapped, riveted, and soldered seams. Use 3/16" diameter rivets spaced 2" o.c.
 - c. Install expansion joints where indicated on the Drawings. If not indicated, place the expansion joints at mid points between the downspouts at maximum intervals of 48 feet.
 - 1) Form the expansion joints with end baffles conforming to the shape of the gutter. Rivet and solder the baffles to the gutter section.
 - 2) Install a cover plate over the baffle.
 - d. Install gutter end pieces, mitered corners and outlet tubes. Solder joints and connections.
 - e. Install a continuous stiffener bar along the top front edge of the gutter. Fold the gutter around the stiffener bar so it is securely locked in place.
 - f. Install gutter braces 3'-0" oc, staggered from the gutter hanger brackets. Secure the braces to the stiffener bar and to the back vertical portion of the gutter with brass or copper bolts.
 - g. Secure the top back edge of the gutter to the gravel stop, eave flashing, or continuous cleat as indicated on the Drawings.

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3. Installation of Downspouts:
 - a. Join the downspout sections with end joints that telescope at least 1½"
 - b. Install necessary offsets and elbows.
 - c. Install a minimum of 2 hangers at each downspout section. Form hangers to keep downspouts 1" away from wall.
 - d. Fasten downspouts to hangers with sheet metal screws.
 - e. Secure hangers to masonry and concrete walls with machine bolts in lead shields and to wood walls with screws.
 - f. Discharge Elbows: Fasten leader shoes to downspouts with a minimum of 3 sheet metal screws.
 - g. Connection to Underground Drains: Fit the downspout neatly into the drain pipe or boot. Caulk the joint with lead wool and seal with sealant.

END OF SECTION

SECTION 078400

FIRESTOPPING/SMOKE SEALS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide firestopping at all penetrations and juncture joints of fire-rated walls, floors and ceilings in accordance with the requirements of the Building Code of the City of New York and BSA or MEA Standards

Firestopping and Smoke Seals shall be provided, but not limited to the following specific locations:

1. Penetrations for the passage of conduit, piping and electrical busways and raceways through fire-rated vertical barriers (walls and partitions), horizontal barriers (floor slabs and floor/ceiling assemblies), and vertical service shafts.
2. Locations shown specifically on the Drawings.

1.02 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1. American Society for Testing and Materials (ASTM)
2. Underwriters Laboratories, Inc. (UL)
3. National Fire Protection Association (NFPA)
4. Warnock Hersey

1.03 SUBMITTALS

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- A. Submit shop drawings of each firestopping or smoke seal system to be installed in the project.
- B. Submit manufacturer's product data including instructions for installing firestopping and smoke seals.
- C. Submit manufacturer's certifications that materials and systems meet or exceed the specified requirements.
- D. Submit certification stating that firestopping and Smoke seals have been completed in full accordance with requirements of this Section and of the Building Code of New York City.
- E. Submit MEA or BSA approval certification for materials and each firestopping or smoke seal system used.

1.04 QUALITY ASSURANCE

- A. All firestopping Work shall be performed by a Subcontractor who will be trained or acceptable to the firestopping manufacturer in the application of its products and systems.

- B. Manufacturer

Minimum of 3 years successful experience in manufacture of firestopping material.

- C. Regulatory Requirements

Conform to U.L. requirements and to requirements of the Building Code of the City of New York and Materials and Equipment Acceptance (MEA) Standards.

- D. Comply with the following for firestopping that is required to be in compliance with 27-345 of the New York City Building Code:

- 1. ASTM E84 - Surface Burning Characteristics of Building Materials.
- 2. ASTM E814 - Fire Tests of Through Penetration Firestops.
- 3. U.L.-1479 - Fire Tests of Through-penetration Firestops.

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4. U.L.- Fire Resistance Directory; Through-Penetration Firestop Systems (XHEZ), and Fill, Void or Cavity Materials (XHHW).
5. U. L. 723 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.05 SYSTEM DESCRIPTION

A. Technical Requirements

1. Firestopping materials shall be UL Classified as "Fill, Void or Cavity Material" for use in Through-Penetration Firestop Systems.
2. Firestop Systems shall provide a fire resistance rating at least equal to the hourly resistance rating of the fire-rated barrier and resist passage of smoke and other gases.

1.06 DEFINITIONS

- A. Penetration: Any opening or foreign material passing through or into a fire-rated barrier.
- B. Fire-Rated: Have the ability to withstand the effects of a standard fire exposure for a specified time period, as determined by qualified testing.
- C. Fire-Rated Barrier: A floor, wall, partition or floor-ceiling assembly able to withstand a standard fire and hose stream test without failure.
- D. Fire resistance rating: The ability of a structure to act as a barrier to the spread of fire and to confine it to the area of origin. Ratings are expressed in hours and apply to beams, columns, floors, ceilings, roofs, walls and partitions.
- E. Firestopping: A means of sealing openings in fire-rated barriers to preserve or restore the fire resistance rating.
- F. Firestop System: A material, or combination of materials, installed to retain the integrity of fire-rated construction by maintaining an effective barrier

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against the spread of flame, smoke or gases through penetrations in fire-rated barriers.

1.07 MANUFACTURER'S CERTIFICATION

- A. Manufacturer shall provide written certification stipulating that its products and systems used in this Project, if installed in accordance with the manufacturer's recommendations, shall provide the firestopping specified in this Section, as indicated by its UL rating for that specific installation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Hilti Construction Chemicals, Inc., Tulsa, OK.
- B. The Carborundum Company, Niagara Falls, NY.
- C. 3M Fire Protection Products, St. Paul, MN.
- D. Bio Fireshield, Inc., Concord, MA
- E. Tremco Sealant Division, Tremco LTD, Toronto, Ontario, Canada.
- F. Specified Technologies, Inc., Somerville, NJ
- G. W. R. Grace & Co., Macungie, PA
- H. RectorSeal Corp., Houston, TX
- I. Or approved equal.

2.02 MATERIALS

- A. Grout and sealant systems shall meet or exceed requirements as specified in Part 1 of this Section.
- B. Firestopping systems shall meet the requirements of ASTM E-814, which include, but are not limited to, the following:

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1. Prevent flame pass-through.
 2. Restrict temperature to not exceed 325 degrees F over ambient on side of assembly opposite flames.
 3. Provide a positive smoke seal.
 4. Withstand hose stream test.
- C. Firestopping materials shall be asbestos-free, emit no toxic or combustible fumes and be capable of maintaining an effective barrier against flame, smoke, gas, and water in compliance with requirements of this Section.
- D. Firestopping materials/systems shall be flexible to allow for normal movement of building structure and penetrating items(s) without affecting the adhesion or integrity of the system.
- E. Firestopping materials shall not require hazardous waste disposal of used containers/packages.
- F. On insulated pipe, the fire-rating classification must not require the removal of the insulation.
- G. Firestopping materials shall be free of solvents and shall not experience shrinkage while curing.
- H. Product names CP25, Metacaulk 1000 or approved equals.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine and confirm the compatibility of surfaces to receive firestopping materials. Verify that surfaces are sound, clean and dry and are ready to receive the firestopping.
- B. Verify that penetration elements are properly located and securely fixed, with the proper space between the penetration element and surfaces of the opening.

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3.02 PREPARATION

- A. Protect adjacent surfaces and equipment from damage.
- B. Clean surfaces of opening.

3.03 INSTALLATION

- A. Install firestopping system in strict accordance with the manufacturer's instructions to obtain the fire-rating required at the specific location.
- B. Provide escutcheons for piping at each side of penetration.

3.04 FIELD QUALITY CONTROL

- A. Inspect all installations to ensure that all work meets the requirements specified.

3.05 CLEANING

- A. Remove excess materials, droppings, and debris; remove excess materials from adjacent surfaces.

3.06 PROTECTION

- A. Protect firestopping installations from damage until completion of all Project Work.

END OF SECTION

SECTION 079200
JOINT SEALERS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide all joint sealer Work as indicated on the Drawings, as required for the completed Work, and as specified herein. This Section includes joint sealants for the following applications:

1. Exterior joints in the following vertical surfaces and horizontal nontraffic surfaces:
 - a. Joints in exterior insulation and finish systems.
 - b. Joints between different materials listed above.
 - c. Perimeter joints between materials listed above and frames of skylights, windows and louvers.
 - d. Other joints as indicated.
2. Interior joints in the following vertical surfaces and horizontal nontraffic surfaces:
 - a. Perimeter joints of exterior openings where indicated.

B. The work of this section shall not take place until all paint has been removed.

1.02 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work

1. American Society for Testing and Materials (ASTM)

1.03 SUBMITTALS

A. Product Data

Catalog sheets, specifications, and installation instructions for each product specified except miscellaneous materials.

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B. Samples for Initial Selection:

1. For general purpose use around windows and at relieving angles, Colors of Exposed Joint Sealants: Match Commissioner's samples. Provide custom colors as specified.
2. For all other uses: provide Manufacturer's color charts consisting of strips of cured sealants showing the full range of Manufacturer's standard colors available for each product exposed to view.

C. Samples for Verification: For each type and color of joint sealant required, provide Samples with joint sealants in 1/2-inch-(13-mm-) wide joints formed between two 6-inch-(150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants

D. Quality Control Submittals

1. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.
2. Installer's Qualifications Data: Affidavit required under Quality Assurance Article.
3. Company Field Advisor Data: Name, business address, and telephone number of Company Field Advisor.
4. Test Results
 - a. Sealant manufacturer's test reports certifying compatibility with all contiguous materials.
 - b. Sealant manufacturer's test reports certifying that the sealant will not stain contiguous materials.
 - c. The results of field adhesion testing.

1.04 QUALITY ASSURANCE

A. Installer's Qualifications

The persons installing the sealants and their supervisor shall be personally experienced in the installation of sealants and shall have been regularly employed by a company engaged in the installation of sealants.

1. Furnish a letter from the sealant manufacturer, stating that the Installer is trained or authorized to install the manufacturer's sealant materials.

B. Container Labels

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Include manufacturer's name, trade name of product, kind of material, federal specification number (if applicable), expiration date (if applicable), and packaging date or batch number.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle joint sealer materials as recommended by the Manufacturer, to protect from damage.

1.06 PROJECT CONDITIONS

A. Environmental Requirements

1. Temperature: Unless otherwise approved or recommended in writing by the sealant manufacturer, do not install sealants at temperatures below 40 degrees F or above 85 degrees F.
2. Humidity and Moisture: Do not install the Work of this Section under conditions that are detrimental to the application, curing, and performance of the materials.
3. Ventilation: Provide sufficient ventilation wherever sealants, primers, and other similar materials are installed in enclosed spaces. Follow manufacturer's recommendations.
4. Do not proceed with installation of joint sealants under the following conditions
 - a. When joint substrates are wet.
 - b. Where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.
 - c. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - d. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.
 - e. Surfaces are frozen.
 - f. Surfaces are superheated by the sun.

B. Protection

1. Protect all surfaces adjacent to sealants with non-staining removable tape or other approved covering to prevent soiling or staining.
2. Protect all other surfaces in the Work area with tarps, plastic sheets, or other approved covering to prevent defacement from droppings.

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3. Protect any painted surfaces which are not included in the Work from impact or damage.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. General Electric Co., Waterford, NY
- B. Dow Corning Corp., Midland, Michigan
- C. Pecora Corp., Harleyville, PA
- D. ChemRex Inc. - Sonneborn, Shakopee, MN
- E. Tremco Sealing and Coatings, Wading River, NY
- F. Sika Corporation, Lyndhurst, NJ
- G. Or approved equal.

2.02 SEALANTS

- A. Type 1 Sealant (for use in vertical expansion joints where movement occurs; for general purpose use around windows, door frames, louvers, and other junctures).
 1. One-part low-medium modulus silicone sealant (plus or minus 50% movement); ASTM C920 classifications type S, grade NS, class 25, uses NT, M, G, and A: General Electric Silpruf, Dow Corning's 791, Pecora's 864, Sonneborn's Omniseal, Tremco Spectrem 2 or Sika SikaSil C-955.
 2. Silicones shall meet the following requirements:
 - ASTM C719 - Low-Medium Modulus (+ or - 50%). Sealants shall not exhibit any cracking or surface degradation after 5000 hours exposure in the Atlas Twin Arc Weatherometer.
 - ASTM C661 - Shall not incur a durometer increase greater than 10 points.
 - Sealants shall contain zero parts of toxic isocyanurate ingredients.

Provide custom colors for use around window perimeters, to match window frame, or other colors as determined by the Commissioner.

Thoroughly clean surfaces on which sealant is to be applied and prime surfaces as recommended by Manufacturer before applying sealant.

- B. Type 1C Sealant - For general use around windows, door frames, louvers, cast stone copings and other junctures.

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One-part silicone sealant; ASTM C920 classifications type S, grade NS, class 25, uses NT, M, G, A and O: Pecora 890; Tremco Spectrum-1 or Sika's SikaSil C-995.

Provide custom colors for use around window perimeters, to match window frame, or other colors as determined by the Commissioner.

2.03 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.
- D. Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
 - 1. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin)], O (open-cell material)] or B (bicellular material with a surface skin, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:
- E. Bond Breaker Tape: Polyethylene or other plastic tape as recommended by the sealant manufacturer; non-bonding to sealant; self-adhesive where applicable.
- F. Flexible Sealing Tape: Sealing tape shall be manufacturer's standard pre-applied to closure system at the factory under controlled conditions.

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G. Glazing Material:

1. Cleaner, Primers, and Sealers: Type recommended by glazing material manufacturer.
2. Edge Blocks: Provide neoprene or silicone as required for compatibility with glazing sealants. Provide blocks with a Shore A hardness of 55±5.
3. Provide sealant backer rods, primers, cleaners, and sealers of type recommended by glass and sealant manufacturers.
4. Waterproofing: Continuous snap-in or slip-in neoprene glazing gaskets applied above and below the glazing. Use neoprene spacers as required, at all extrusions for glazing separation; at no point shall glazing come in contact with metal parts. So not use butyl tape or similar type materials.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine all joint surfaces for conditions that may be detrimental to the performance of the completed Work. Do not proceed until satisfactory corrections have been made.

3.02 PREPARATION

- A. Clean joint surfaces immediately before installation of sealant and other materials specified in this Section.
1. Remove all loose materials, dirt, dust, rust, oils and other foreign matter that will impair the performance of materials installed under this Section.
 2. Remove lacquers, protective coatings and similar materials from joint faces with manufacturer's recommended solvents.
 3. Use methods such as grinding, acid etching or other approved and manufacturer's recommended means, if required, to clean the joint surfaces, assuring that the sealant materials will obtain positive and permanent adhesion.

3.03 JOINT BACKING INSTALLATION

- A. Install bond breaker tape in relaxed condition as it comes off the roll. Do not stretch the tape. Lap individual lengths.

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- B. Install backer rod of sufficient size to fill the joint width at all points in a compressed state. Compress backer rod at the widest part of the joint by a minimum of 25 percent. Do not cut or puncture the surface skin of the rod.

3.04 SEALANT INSTALLATION

- A. Except as shown or specified otherwise, install sealants in accordance with the manufacturer's printed instructions.
- B. Install sealants with ratchet hand gun or other approved mechanical gun. Where gun application is impracticable, install sealant by knife or by pouring, as applicable.
- C. Finishing

Tool all vertical, non-sag sealants so as to compress the sealant, eliminating all air voids and providing a neat smoothly finished joint. Provide slightly concave joint surface, unless otherwise indicated or recommended by the manufacturer.

- 1. Use tool wetting agents as recommended by the sealant manufacturer.

3.05 WET SEALANT GLAZING

- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.06 FIELD QUALITY CONTROL

- A. Field Adhesion Testing of Sealants - Test completed elastomeric joints as follows:

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1. Extent of Testing: Test completed elastomeric sealant joints as follows:
 - a. Perform 10 tests for the first 1000 feet of joint length for each type of elastomeric sealant and joint substrate.
2. Test Method - Test joints by hand pull method described below:
 - a. Make knife cuts from one side of the joint to the other, followed by two cuts approximately 2 inches long at sides of joint and meeting cross cut at one end. Place a mark 1 inch from cross-cut end of 2 inch piece.
 - b. Use fingers to grasp 2 inch piece of sealant between cross-cut end and 1" mark, pull firmly at a 90 degree angle or more in direction of side cuts while holding a ruler along sides of sealant. Pull sealant out of joint to the distance recommended by the sealant manufacturer for testing adhesive capability, but not less than that equaling specified maximum movement capability in extension, hold this position for 10 seconds.
 - c. For joints with dissimilar substrates, check adhesion to each substrate separately. Do this by extending cut along one side, checking adhesion to opposite side.
3. Inspect joints for complete fill, for absence of voids, and for joint configuration complying with specified requirements. Record results in a field-adhesion-test log.
4. Inspect tested joints and report on the following:
 - a. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.
 - b. Whether sealants filled joint cavities and are free of voids.
 - c. Whether sealant dimensions and configurations comply with specified requirements.
5. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion

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results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.

6. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.
7. Evaluation of Field Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.07 CLEANING

- A. Immediately remove misapplied sealant and droppings from metal surfaces with solvents and wiping cloths. On other materials, remove misapplied sealant and droppings by methods and materials recommended in writing by the manufacturer of the sealant material.
- B. After sealants are applied and before skin begins to form on sealant, remove all masking and other protection and clean up remaining defacement caused by the Work.

END OF SECTION

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SECTION 081102
STEEL DOORS AND FRAMES

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Finish Hardware: Section 087100.
- B. Glass and Glazing: Section 088100.

1.02 SUBMITTALS

- A. Shop Drawings: Show details of each frame type, elevation and construction for each door type, conditions at openings, location and installation requirements for finish hardware including cutouts and reinforcements, details of connections, and anchorage and accessory items.
 - 1. Include a schedule of doors and frames using the same reference numbers for details and openings as those shown on the Contract Drawings.
- B. Product Data: Manufacturer's catalog sheets, specifications, and installation instructions.
- C. Samples:
 - 1. Frames: Corner sample of each type, 18 x 18 inches, with mortises and reinforcements, shop primed.
 - 2. Doors: Corner sample of each type showing construction, 18 x 18 inches, with mortises and reinforcements, shop primed.

1.03 QUALITY ASSURANCE

- A. Fire Rated Assemblies: Wherever a fire resistance classification is shown or scheduled for steel doors and frames; provide fire rated units that have been tested as fire door assemblies, and comply with National Fire Protection Association (NFPA) Standard No. 80 and these specifications. Identify each door and frame with a metal UL, FM, or WHI label. Indicate the applicable fire class on the door label. Rivet or weld labels on the hinge edge of door and jamb rabbet of frame. If continuous hinges are specified, rivet or weld labels on the header rabbet of frame and on top exposed edge of door. Locate labels as close to hinge edge as possible.

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1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver doors and frames in heavy paper cartons or other protective packaging.
- B. Store doors and frames on raised platforms in vertical position with blocking between units to allow air circulation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. General Fireproof Door Corp., Bronx, NY 10474
- B. Acme & Dorf Door Corp., Clifton NJ 07011
- C. Ceco Door Products Div., **Milan**, TN 38358
- D. Acme Steel Door Co., Brooklyn, NY 11222
- E. Curries Company, Mason City, IA 50401
- F. Metalline Fire Door Co., Bronx, NY 10457
- G. Long Island Fireproof Door, Port Washington, NY 11050
- H. Michbi Doors Inc. Brentwood, NY 11717
- I. Or, approved equal.

2.02 MATERIALS

- A. Hot-Rolled Steel Sheets and Strip: Commercial quality carbon steel, pickled and oiled, complying with ASTM A 569 and ASTM A 568.
- B. Cold-Rolled Steel Sheets: Commercial quality carbon steel complying with ASTM A 366 and ASTM A 568.
- C. Galvanized Steel Sheets: Zinc-coated carbon steel sheets of commercial quality complying with ASTM A 526, with A 60 zinc coating, mill phosphatized, complying with ASTM A 525.
- D. Anchors and Supports: Fabricate of not less than 16 gage sheet steel unless otherwise indicated.

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1. Galvanized Units: Galvanize anchors and supports to be used with galvanized frames, complying with ASTM A 153, Class B.
- E. Anchorage Devices, Bolts, and Other Fasteners: Manufacturer's standard units unless otherwise indicated.
1. Galvanized Units: Galvanize items to be used with galvanized frames complying with ASTM A 153, Class C or D as applicable.

2.03 DOORS

- A. General:
1. Design and Thickness: Flush design doors, seamless, hollow construction, 1-3/4 inches thick.
 2. Sound Deadening (ASTM E 90): Minimum Sound Transmission Class (STC) of 25.
 3. Door Edges: Bevel lock stile edge of single acting hinged doors 1/8 inch in 2 inches. Double acting doors shall have rounded edges, approximately 2-1/4 inch radius. Meeting stiles of pairs of single acting doors shall be "V" beveled, unless otherwise specified or shown.
 4. Glazing Stops and Beads: Fixed steel stops, formed integral with door unless otherwise acceptable to the Director, on the outside of exterior doors and on the secure side of interior doors. Removable steel beads, of not less than 20 gage formed sheet or solid bar stock, on the other side of doors secured with machine screws; form corners with butted hairline joints. Coordinate width of rabbet between fixed stop and removable bead and depth of rabbet with type of glass and glazing required.
 5. Astragals: Steel, attached with machine screws unless shown otherwise.
- B. Exterior Doors:
1. Fabricate exterior doors with 2 outer stretcher-leveled, galvanized steel sheets not less than 16 gage. Construct doors with smooth, flush surfaces without visible joints or seams on exposed faces or stile edges, except around glass and louver panels. Vertical edges may be continuously MIG or ARC welded and ground smooth, or intermittent welded 2 inches oc and body filled and dressed to achieve a seamless edge.
 2. Reinforce inside of doors with one of the following:

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- a. Vertical, full door height, channel-shaped or hat-shaped or interlocking z-shaped sheet steel sections of not less than 20 gage thickness. Space the reinforcing sections on not more than 6 inch centers and spot weld on 4 inch centers to both face sheets.
 - b. Roll-formed 18 gage sheet steel reinforcing, 4 vertical and a minimum of 8 horizontal members, double projection welded to both face sheets on not more than 6 inch centers.
 - c. Continuous truss-form inner core of 28 gage sheet steel reinforcing. Spot weld on 3 inch centers, vertically and horizontally, to both face sheets.
 - d. Phenolic resin impregnated kraft paper, single piece core of one inch hexagonal cells, securely bonded to both face sheets with waterproof adhesive.
3. Reinforce top and bottom of doors with 16 gage horizontal steel channel welded to the outer sheets. Close top and bottom edges with flush steel weather seal. Weather seal may be an integral part of door construction, or formed by addition of another steel channel or filler plate welded to the door.
 4. Insulate doors to achieve a maximum coefficient of thermal transmittance (apparent "U" Factor) of 0.40.
- C. Interior Doors:
1. Fabricate interior doors with 2 outer stretcher-leveled, cold-rolled steel sheets not less than 14, 16, or 18 gage. Construct doors with smooth, flush surfaces without visible joints or seams on exposed faces or stile edges, except around glass and louver panels. Continuously MIG, ARC or laser weld and ground smooth vertical edges to achieve a seamless edge.
 - a. Fabricate interior doors with 2 outer galvanized steel sheets in high humidity spaces where shown.
 2. Reinforce inside of doors with one of the following:
 - a. Vertical, full door height, channel-shaped or hat-shaped or interlocking z-shaped sheet steel sections of not less than 20 gage thickness. Space the reinforcing sections on not more than 6 inch centers and spot weld on 4 inch centers to both face sheets.

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- b. Roll-formed 18 gage sheet steel reinforcing, 4 vertical and a minimum of 8 horizontal members, double projection welded to both face sheets on not more than 6 inch centers.
 - c. Continuous truss-form inner core of 28 gage sheet steel reinforcing. Spot weld on 3 inch centers, vertically and horizontally, to both face sheets.
 - d. Phenolic resin impregnated kraft paper, single piece core of one inch hexagonal cells, securely bonded to both face sheets with waterproof adhesive.
3. Reinforce top and bottom of doors with not less than 18 gage horizontal steel channel welded to the outer sheets.
- a. Close top and bottom edges with flush steel cap. Cap may be an integral part of door construction, or formed by addition of another steel channel or filler plate welded to the door.

2.04 FRAMES

- A. General:
1. Furnish steel frames for doors, transoms, sidelites, borrowed lites, and other openings wherever shown, of size and profile as specified or shown.
 2. Construction: Full-welded unit construction, with corners mitered and continuously welded full depth and width of frame, unless otherwise specified or shown. Knock-down type frames will not be accepted.
 - a. Fixed Stops: Integral 5/8 inch stop unless otherwise shown.
 - b. Removable Beads: Removable steel beads secured with machine screws. Form corners with butted hairline joints.
 - c. Prepare door frames for silencers as required.
 - d. Do not drill frames for silencers.
- B. Exterior Frames: Form exterior frames of galvanized steel sheets, not less than 12, 14, or 16 gage for openings up to 4 feet wide, and not less than 12 gage for larger openings.
- C. Interior Frames: Form interior frames of either hot-rolled or cold-rolled steel sheets, not less than 12,

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- 14, or 16 gage for openings up to 4 feet wide, and not less than 12, or 14 gage for larger openings.
1. Form interior frames of galvanized steel sheets in high humidity spaces where shown.
 2. Terminated Stops: Terminate 6 inches above floor, cut at 45 degree angle, and close bottom of stop with a metal filler plate welded in place.
- D. Wall Anchors: Unless otherwise specified or shown, formed of not less than 16 gage steel, and galvanized when used with galvanized frames.
1. Masonry Construction: Adjustable, corrugated or perforated T-shaped to suit frame size with leg not less than 2 inches wide by 10 inches long. Furnish at least 3 anchors per jamb up to 7'-6" jamb height; 4 anchors per jamb to 8 foot jamb height; one additional anchor per jamb for each 24 inches or fraction thereof over 8 feet high.
 2. Steel Stud Construction: Weld-in type welded to back of frame unless otherwise indicated or approved. Furnish at least 4 anchors per jamb up to 7'-6" jamb height; 5 anchors per jamb to 8 foot jamb height; one additional anchor per jamb for each 24 inches or fraction thereof over 8 feet high.
 3. Anchors for Completed Openings: Anchorage devices designed to secure frame to in-place concrete or in-place masonry construction, as applicable. Furnish at least 5 anchors per jamb up to 7'-6" jamb height; 6 anchors per jamb to 8 foot jamb height; one additional anchor per jamb for each 12 inches or fraction thereof over 8 feet high.
- F. Floor Anchors: Furnish floor anchor for each jamb and mullion which extends to floor, formed of not less than 16 gage steel, with 2 holes to receive fasteners, welded to bottom of jamb or mullion, and galvanized if used with galvanized frames.
- G. Head Anchors: Furnish 2 anchors at head of frames exceeding 42 inches wide for frames mounted in steel stud walls. Frame manufacturer's standard head anchor unless otherwise shown.
- H. Structural Reinforcing Members: Furnish structural reinforcing members, as a part of frame assembly, where indicated at mullions, transoms, and other locations.
- I. Shipping Bars: Removable spreader bar across bottom of frames, tack welded to jambs and mullions.

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- J. Mortar Guards: 26 gage steel mortar or plaster guards, welded to frame, at back of finish hardware cutouts where mortar or other materials might obstruct hardware operation.

2.05 FRAMES FOR COMPLETED OPENINGS

- A. Where shown, furnish frames consisting of rough buck and slip (finish) buck.
1. Galvanize members of exterior frames.
- B. Rough Buck: Furnish rough buck at the jambs only, consisting of a channel with one leg approximately 3/4 inch, the other approximately 1-1/2 inches, and with a 12 gage stiffening clip at hinge reinforcing.
1. Use 12 gage steel for exterior frames.
 2. Use 14 gage steel for interior frames.
 3. Anchors:
 - a. 3/8 inch dia machine bolts with metal expansion shields for concrete and solid masonry.
 - b. 3/8 inch dia toggle bolts for hollow portions of masonry.
 - c. Unless otherwise shown, furnish at least 5 anchors per jamb up to 7'-6" jamb height; 6 anchors per jamb to 8 foot jamb height; one additional anchor per jamb for each 12 inches or fraction thereof over 8 feet high.
- C. Finish Buck: Furnish a slip buck with mitered corners welded and ground smooth.
1. Use 14 gage steel for exterior frames.
 2. Use 16 gage steel for interior frames.

2.06 PANELS

- A. Furnish panel units as indicated.
1. Fabricate exterior panels same as specified for exterior doors.
 2. Fabricate interior panels same as specified for interior doors.

2.07 LOUVERS

- A. Except for fire rated louvers, fabricate louvers to mount flush into doors without overlapping moldings on surface of door-facing sheets. Provide internal support as recommended by louver manufacturer.

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- B. Interior Louvers: Sightproof, stationary type, constructed of inverted "Y" shaped blades formed of 18 gage cold-rolled steel. Space blades to provide not less than 30 percent free air opening.
- C. Fire Rated Louvers: Listed, fusible link, self-closing fire door type.

2.08 FABRICATION

- A. Fabricate steel door and frame units to be rigid, neat in appearance, and free from warp, buckle and other defects. Accurately form metal to required sizes and profiles. Weld exposed joints, and make smooth, flush and invisible by filling or grinding and dressing. Wherever practicable, fit and assemble units in the manufacturer's plant. Clearly identify items that cannot be permanently factory-assembled before shipment, to assure proper assembly at the project site.
- B. Exposed Fasteners: Countersunk, flat or oval Phillips head for exposed screws and bolts. Unless otherwise specified or shown, locate fasteners 2 inches from each end of members and not more than 12 inches apart.
- C. Exposed Fasteners: Countersunk flat tamper-resistant head for exposed screws and bolts. Unless otherwise specified or shown, locate fasteners 2 inches from each end of members and not more than 12 inches apart.
- D. Finish Hardware Preparation:
 - 1. Prepare doors and frames to receive mortised and concealed finish hardware, including cutouts, reinforcing, drilling and tapping, in accordance with Finish Hardware Schedule and templates furnished by hardware manufacturer.
 - 2. Reinforce doors and frames to receive surface applied hardware. Drilling and tapping for this hardware shall be done at the project site.
 - 3. Locate finish hardware as specified elsewhere or as shown on the hardware manufacturer's templates.
 - 4. Weld 14 gage steel tongues, 1-1/2 inches high, inside lock mortise to keep lock body centered in door.
 - 5. Install 7 gage reinforcement for hinges and pivots, except hinge reinforcement in door edge may be a one-piece 12 gage channel full door height with extruded hinge screw holes having an average minimum thread pull-out strength of 1600

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- pounds per hole. Install 12 gage reinforcement for all other hardware.
6. Reinforce doors not mortised for concealed door closers for surface door closer application, and all frames for closer arm application, whether or not closers are specified.
- E. Clearances: Fabricate doors for their respective frames within the following clearances:
1. Jams and Head: 3/32 to 1/8 inch.
 2. Meeting Edges of Pairs: 1/8 to 1/4 inch.
 3. Bottom (no threshold or carpet): 3/4 inch, maximum to finished surface.
 4. Bottom (at threshold or carpet): 3/8 inch, maximum to top of threshold or carpet.
 5. Fire Rated Doors: Comply with clearances specified in NFPA Standard No. 80.
- F. Shop Painting:
1. Chemically wash, rinse, and dry exposed and concealed surfaces of fabricated units.
 2. Apply one coat of primer to all surfaces and oven-bake units.
 3. Units shall be capable of passing the following tests:
 - a. Salt Spray Test complying with ASTM B 117 for 120 continuous hours.
 - b. Water Fog Test complying with ASTM D 1735 for 240 continuous hours.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions: Examine the substrate and conditions under which the frames are to be installed for defects that will adversely affect the execution and quality of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. Install steel doors, frames, and accessories in accordance with the manufacturer's printed instructions, except as otherwise specified or shown.
- B. Frame Installation: Place frames accurately in position; plumb, align, and brace securely until permanent anchors are set. After wall construction is

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complete, remove temporary braces and spreader bars, leaving surfaces smooth and undamaged.

1. Floor anchors may be set with powder-actuated fasteners instead of anchorage devices and machine screws, if so approved on final shop drawings.
 2. Place fire rated frames in accordance with NFPA Standard No. 80.
 3. Make necessary field splices in frames as detailed on final shop drawings, welded and finished to match factory fabrication.
 4. Placing Frames For Completed Openings: Secure to in-place concrete and in-place masonry construction with anchorage devices. Set anchorage device opposite each anchor location in accordance with details on final shop drawings and anchorage device manufacturer's instructions. Leave drilled holes rough, not reamed, and free from dust and debris.
- C. Door Installation:
1. Install doors accurately in their respective frames within the clearances specified in Part 2.
 2. Place fire rated doors with clearances as specified in NFPA Standard No. 80.
- D. Drill and tap doors and frames to receive surface applied hardware.

3.03 ADJUSTING

- A. Prime Coat Touch-up: Immediately after installation, sand smooth and clean rusted and damaged areas of shop prime coat and apply touch-up of compatible air-drying primer.
- B. Final Adjustments: Check and readjust operating finish hardware items just prior to final inspection. Leave Work in complete and proper operating condition.

3.04 CLEANING

- A. Clean doors, frames, and accessories free of dirt and other foreign materials after completion of installation.

END OF SECTION

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SECTION 081116
ALUMINUM DOORS AND FRAMES

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Finish Hardware and Thresholds: Section 087100.
- B. Glass and Glazing: Section 088100.

1.02 SUBMITTALS

- A. Shop Drawings: Show details of each frame type, elevation and construction for each door type, conditions at openings, location and installation requirements for finish hardware (including cutouts and reinforcements), details of connections, and anchorage and accessory items.
- B. Product Data: Catalog sheets, specifications, and installation instructions for each type door and frame specified.
- C. Samples:
 - 1. Frames: Corner sample of each type, 18 x 18 inches, with mortises, reinforcements, and specified finish.
 - 2. Doors: Corner sample of each type showing construction, 18 x 18 inches, with mortises, reinforcements, and specified finish.
 - 3. Color Samples: Manufacturer's standard colors showing maximum variation of each color. Submit actual production sections large enough to establish the allowable color shade range.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Aluminum:
 - 1. Extruded Shapes: 6063 alloy, T5 temper.
 - 2. Sheet, and Shapes Formed of Sheet: 1100 alloy, H14 temper.
 - 3. Color Anodized Aluminum: 5005 alloy of temper for required shapes.

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- B. Steel Subframes: ASTM A 36 plates, shapes and bars.
- C. Reinforcement: Manufacturer's standard formed or fabricated steel units, of shapes, plates or bars; galvanized after reinforcement fabrication, ASTM A 123.
- D. Inserts: Cast iron, malleable iron, 12 gage galvanized steel, ASTM A 153, for required anchorage to concrete or masonry Work.
- E. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and equal to four times the load imposed when installed in concrete, as determined by testing per ASTM E 488, conducted by a qualified independent test agency.
 - a. Carbon Steel: Zinc-Plated; ASTM B 633, Class Fe/Zn 5.
 - b. Stainless Steel: Bolts, Alloy Group 1 or 2; ASTM F593, Nuts; ASTM F 594.
- F. Machine Screws for Steel Subframes: ASME B18.6.3.
- G. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.
- H. Compression Weatherstripping: Replaceable stripping of either molded neoprene gaskets complying with ASTM D 2000, Designation 2BC415 to 3BC620, or molded PVC gaskets complying with ASTM D 2287.
- I. Sliding Weatherstripping: Replaceable stripping of wool, polypropylene or nylon woven pile, with nylon fabric and aluminum strip backing, complying with AAMA 701.1.
- J. Sealants and Gaskets: Manufacturer's standard for the fabrication, assembly and installation of the Work; guaranteed by the manufacturer to remain permanently elastic, non-shrinking, non-migrating and weatherproof.
- K. Glazing Gaskets: Stripping of molded neoprene complying with ASTM D 2000, Designation 2BC415 to

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3BC620, or molded PVC complying with ASTM D 2287, or molded closed-cell neoprene complying with ASTM C 509, Type II, for glazing factory-installed glass and panels, and for gaskets which are factory-installed in a "captive" assembly of glazing stops.

2.02 FABRICATION

A. Frames:

1. Fabricate door frames of formed or extruded aluminum not less than 0.125 inch thick.
2. Door Stops: Manufacturer's standard integral extruded shapes.
3. Glazing Beads: Manufacturer's standard integral extruded shapes.
4. Subframes: Fabricate subframe assemblies and accessories, as shown, of materials specified herein.

B. Glazed Doors:

1. Fabricate stiles and rails of extruded aluminum tubular shapes, 1/8 inch min wall thickness, not less than 3 inches wide. Attach extrusions together by means of concealed mechanical fasteners and concealed welding.
2. Glazing Beads: Manufacturer's standard extruded shapes.
3. Door Edges: Lock stile edge of single acting doors shall be beveled 1/8 inch in 2 inches. Double acting doors shall have 4 inch radius rounded edges. Meeting stile edges of pairs of single acting doors shall be "V" beveled or rounded, as indicated.

C. Flush Doors: Fabricate doors with continuous, flush, unbroken surfaces without visible seams.

1. Inner Construction: Heavy extruded stiles and rails joined by welding, by steel tie rods, or both.
2. Core: Additional extruded tubing, foamed-in-place urethane foam, or phenolic resin honeycomb.
3. Face Sheets: Minimum .081 inch fastened directly to core, or minimum .040 inch laminated to 1/8 inch tempered hardboard, smooth aluminum sheet.

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4. Glass Frames: Manufacturer's standard extruded channel, continuous around opening, with formed or extruded glazing beads.
 5. Door Edges: Lock stile edge of single acting doors shall be beveled 1/8 inch in 2 inches. Double acting doors shall have 4 inch radius rounded edges. Meeting stile edges of pairs of single acting doors shall be "V" bevel.
- D. Aluminum Tempered Glass Doors: Manufacturer's standard aluminum top and bottom rail or corner assemblies permanently fastened to 1 inch tempered float glass.
- E. Finish Hardware Preparation: Attach concealed reinforcements and cut mortises of sizes required and where located by the approved hardware schedule, for the proper installation of finish hardware.
1. Reinforcements: 1/4 inch thick aluminum.
 2. Install reinforcements within mortises at the depths required to bring the hardware surfaces flush with the door and jamb surfaces.
 3. Extend reinforcements for hinges, pivots, floor hinges, 4 inches above and below mortises on side jambs and door edges.
 4. Reinforce all doors not mortised for concealed door closers on both sides for surface door closer application; and all frames on both sides for closer arm application.

2.03 FINISHES

- A. Preparation: After fabrication of doors and frames, but before lamination of panels (if any), prepare the aluminum surfaces for finishing in accordance with the Aluminum Association recommendations and standards. Process all components of each assembly simultaneously to attain complete uniformity of color.
- B. Finish exposed aluminum door and frame components as follows:
1. Natural Anodized Finish: NAAMM AA-M21C22A41, (minimum thickness of 0.7 mils), natural aluminum color.

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PART 3 EXECUTION

3.01 INSTALLATION

- A. Securely anchor sub-framing to supporting structures, plumb and level and properly prepared to receive aluminum doors and frames.
- B. Protect areas of frames and panels to be in contact with sealants and surfaces of glazing rebates and glazing beads with protective, strippable tape. Do not apply lacquer to such areas. Remove tape immediately before application of caulking or glazing compound.
- C. Paint aluminum surfaces in contact with masonry and incompatible metals with bituminous paint.
- D. Door Installation: Fit doors accurately in their frames, with the following clearances:
 - 1. Jambs and Head: 3/32 inch.
 - 2. Bottom; no Threshold: 3/8 inch.
 - 3. Bottom, at Threshold: 1/8 inch.

3.02 PROTECTION

- A. Provide protective covering to protect aluminum doors and frames from damage or defacement after erection.

3.03 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating finish hardware items just prior to final inspection. Leave Work in complete and proper operating condition.
- B. When directed, or just prior to final inspection remove protective coverings and clean aluminum surfaces with products specifically formulated for aluminum and known to be compatible with finishes specified herein.

END OF SECTION

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SECTION 085123
STEEL WINDOWS

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Joint Sealers: Section 079200.
- B. Glass and Glazing: Section 088100.
- C. Painting: Section 099000.

1.02 REFERENCES

- A. Except as shown or specified otherwise, the Work of this Section shall conform to the requirements of the "Steel Window Specifications" of the Steel Window Institute (SWI).

1.03 DESCRIPTION

- A. Window Classification and Weight:
 - 1. Standard Intermediate.

1.04 SUBMITTALS

- A. Shop Drawings: Show fabrication details and connections to adjacent construction.
- B. Product Data: Catalog sheets, specifications, and installation instructions for each type of window unit.
- C. Quality Control Submittals:
 - 1. Test Reports: Certified air infiltration, water penetration, and structural performance test reports for each type of window unit required.
- E. Contract Closeout Submittals:
 - 1. Operation and Maintenance Data: Deliver 2 copies, covering the installed products, including instructions for cleaning and touching-up finish, to the Director's Representative.

1.05 QUALITY ASSURANCE

- A. Testing Agency:

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1. Air infiltration, water penetration, and structural performance tests shall be performed by a qualified independent testing laboratory.
2. Fire rated windows shall be labeled by Factory Mutual System, Underwriters Laboratories Inc., or other nationally recognized testing laboratory.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver windows in sturdy, protective crates or containers.
- B. Store and handle windows in a manner that will not cause damage to the finish.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Windows and Frames: Solid steel shapes made from new billet steel.
 1. Mullions: Solid steel shapes or plates with sheet steel covers, unless otherwise shown.
- B. Glazing Beads: Unless otherwise shown or specified, extruded aluminum, 6063 alloy T5 temper, with a minimum thickness of 0.06 inch; continuous snap-on type.
 1. Fire-Rated Windows: Formed steel glazing beads, screw-on type.
 2. Finish: Finish shall match windows.
- C. Accessories:
 1. Anchors: Anchors, clips, fittings, and related fasteners shall be galvanized or cadmium plated steel, unless otherwise approved.
 2. Window Cleaning Anchors: Non-magnetic stainless steel or nickel-copper alloy; ANSI A39.1.
- D. Sealing Mastic: Non-staining sealant material recommended by window manufacturer.

2.02 FABRICATION

- A. Ventilator sections shall be hot rolled with integral flanges providing parallel double contact surfaces around perimeter of each ventilator.
- B. Corners of frames and ventilators shall be mitered or coped and solidly welded. Exposed and contact

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surfaces shall be finished smooth flush with adjacent surfaces.

- C. Glazing: Windows shall be fabricated for inside glazing with glazing beads. Glazing beads shall be sized to suit the glass specified.
- D. Tolerance for Window Size (height and width) Dimensions: + 1/16 inch.
- E. Anchor Accessories: Fabricate to shape and size, and furnish in quantity, as required to securely install and connect the Work of this Section to the construction shown.
- F. Hardware: Unless otherwise shown or specified, window manufacturer's standard hardware series produced for use with the particular type of window, location, and screen condition.
- G. Fixed Window Units: Non-operable units of design and profile shown.
- H. Fire Rated Windows: Heavy intermediate units labeled for 3/4 hour fire rating (ASTM E 163), and complying with NFPA Standard No. 80.
 - 1. Glazing: Fabricated for inside glazing with continuous steel glazing beads.

2.03 SHOP FINISHES

- A. Galvanizing: Steel window surfaces, except ventilators, shall be cleaned, pickled, fluxed, and hot-dip galvanized in accordance with ASTM A 123.
 - 1. Ventilator surfaces shall be cleaned, pickled and electro-galvanized in accordance with ASTM B 633, Classification Fe/Zn 25.
- B. Prime Coat Finish: Steel window surfaces shall receive zinc phosphate treatment in a 5 stage process and one coat of baked-on epoxy primer with a minimum 1 mil dry film thickness.
- C. Acrylic/Polyester Enamel Factory Finish: Steel window surfaces shall receive zinc phosphate treatment in a 5 stage process, one coat of baked-on epoxy primer, followed by an oven baked coat of acrylic or polyester enamel.
 - 1. Color: Selected from window manufacturer's standard colors.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine surfaces to receive steel windows for defects that will adversely affect the execution and quality of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. Install the Work of this Section in accordance with the manufacturer's printed instructions, except as shown or specified otherwise.
- B. Anchor window units securely in place, plumb, level, aligned, without warp.
- C. Seal metal to metal joints, screw heads, and unneeded fastener holes with sealing mastic.

3.03 ADJUSTING AND CLEANING

- A. Adjust ventilators and hardware for smooth operation and weathertight closure. Lubricate hardware and other moving parts.
- B. Clean window units promptly after completion of installation

END OF SECTION

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SECTION 087100
FINISH HARDWARE

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Steel Doors and Frames: Section 081102.

1.02 REFERENCES

- A. Materials and Finishes Standard: ANSI/BHMA A156.18-2006, "American National Standard for Materials and Finishes".

1.03 DEFINITIONS

- A. Company Field Advisor(s): Hardware manufacturers' representatives who are certified in writing by manufacturer to be technically qualified in design, installation, operation, inspection, and servicing of products.

1.04 SUBMITTALS

- A. Submittal Packages:
1. Submit the Quality Assurance Package prior to other submittal packages. After Quality Assurance Package is approved, submit the Samples if required, and finally the Packages listed below:
 2. Submit the Finish Hardware Schedule, and Product Data, specified below at the same time as a package. Partial submittal will not be approved.
- B. Finish Hardware Schedule: Use vertical format, horizontal format not acceptable. Include all Finish Hardware to complete the Work.
- C. Contract Close Out Submittals: Turn over to the Commissioner immediately following the Post Installation Inspection.
1. Operation and Maintenance Manuals:
 - a. Furnish 2 copies.
 - b. Manufacturers' operation, installation, maintenance and repair instructions,

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- and templates, for each type of hardware provided.
- c. Parts List for each type of finish hardware provided.
- d. Manufacturers' written warranties for each type of finish hardware.
- 2. Certification: Written certification from Company Field Advisor(s) or Installation Supervisor that the products are installed according to manufacturers' recommendations, are operating properly. Manufacturers' written warranty will be in effect upon physical completion of the Work.
- 3. Maintenance Materials.

1.05 QUALITY ASSURANCE

- A. Uniformity of Hardware and Single Source Responsibility: Provide each kind of hardware (door closers, locks, hinges, etc.) from the same manufacturer.
- B. Size Variations: Manufactures' products may vary slightly from sizes specified except where a minimum size or thickness is specified. Variations shall not prevent the product from performing the intended use.
- C. Installation Supervisor: Employ a qualified installation supervisor who will be responsible to ensure approved finish hardware is installed, adjusted, and operating properly.

1.06 TEMPLATES

- A. After receipt of approved submittals, furnish templates to affected trades, to enable fabricators to make provision for finish hardware without delaying Project progress.

1.07 DELIVERY AND STORAGE

- A. Coordinate delivery to avoid delay.
- B. Package hardware with fasteners, parts, instructions, and templates.

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- C. Clearly label each item for identification and installation location according to approved Finish Hardware Schedule.
- D. Provide locked, dry storage for Finish Hardware at a location acceptable to Commissioner.

1.08 Tools

- A. Hand Tool Maintenance Kit: Lockable steel tool box containing one set of all hand tools necessary to perform preventative maintenance and repairs to the Hardware. Include:
 - 1. One complete Torx kit and driver.
 - 2. Six special Hex wrenches for door closer adjustment.
 - 3. Provide manufacturer's recommended lubricants for hinges, locksets, exit devices, and closers etc. sufficient for 3 years of maintenance.
 - 4. Turn Kit over to the Facility through the Commissioner.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Butts

- 1. Stanley
- 2. McKinney
- 3. Hager
- 4. Bommer
- 5. Lawrence

B. Continuous Hinges

- 1. Markar
- 2. McKinney
- 3. Ives

- C. Locksets, Passage Sets (Lever Type) (Double cylinder is required for the intruder function.)

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1. Yale SL 8800 FL Series mortise lock with JLxCN Jefferson Lever trim in satin stainless steel finish (BHMA 630). Model 8818-2 for room security intruder with visual indicator.
 2. Sargent 8200 Series mortise lock with LW1B trim in satin stainless steel finish (BHMA 630). Model 49-8238 for room security intruder with visual indicator
 3. Schlage L9000 Series mortise lock with 07 lever and N escutcheon. Provide classroom security function with XL12-751 Security Indicator, in satin stainless steel finish (BHMA 630).
 4. Marks BE101 5000-BL Series BHMA 630 finish.
 5. Best Access Systems 45H series mortise lock with 15J trim BHMA 630 finish. INL-Intruder for classroom intruder function with visual indicator.
 6. Corbin Russwin ML2002 for room intruder function with visual indicator.
- D. Rim Latch
1. Yale
 2. Segal
- E. Cylinders
1. Sargent
 2. Corbin Russwin
 3. Schlage
 4. Marks
 5. Yale
 6. Falcon
- F. Exit Devices
1. Von Duprin 99 Series
 2. Precision APEX 2100 and 2200 Series

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3. Sargent 8700 and 8800 Series
4. Falcon 25 Series
5. Yale 7100 Series

G. Pulls

1. Rockwood
2. Ives

H. Push Plates

1. Rockwood
2. Ives

I. Door Closers (non-ADA)

1. LCN
2. Norton
3. Sargent
4. Yale
5. Dorma

J. Door Closers (for-ADA)

1. LCN 1461 DEL
2. Norton 8501 BF DA
3. Dorma 8616AF86P by FCOB
4. Yale 3501 BF DA

K. Stop and Holder

1. Glynn Johnson (81 Series)
2. Architectural Builders Hardware (HD8000 Series)
3. Rixson (Heavy-Duty 8HD Series)

L. Electro-Magnetic Door Holder/Closer

1. Rixson
2. LCN

M. Surface Bolts

1. Ives
2. Rockwood
3. Securitech

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N. Flush Bolts

1. Ives
2. Rockwood
3. Glynn Johnson

O. Mortise Privacy Door Bolt

1. Ives
2. Sargent

P. Security Locks

1. Sargent
2. Yale
3. Securitech
4. Secur-A-Door, Inc.

Q. Cardholders

1. Rockwood

R. Kick plates

1. Ives
2. Rockwood

S. Silencers

1. Ives
2. Rockwood

2.02 FASTENINGS

- A. Provide appropriate fasteners that harmonize with the material and finish.
- B. Provide Torx center pin security fasteners for exposed items of hardware, including full mortise hinges. Use non-removable pin or hospital tip on all hinges.
- C. Provide Torx center pin security fasteners for hardware to be secured to metal; self-tapping screws are not acceptable. Provide Torx security head machine screws and metal expansion shields for attachment to masonry substrates.

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- D. Provide undercut (shallow head) Torx center pin security fasteners where necessary for proper seating.
- E. Provide sex bolts for door closers and overhead stop and holders.

2.03 ACCESSORIES, BRACKETS AND PLATES

- A. Strikes are to fit individual lockset function. Universal or generic strikes that fit a variety of lockset functions are not acceptable. Furnish curved lip strikes with wrought boxes.
- B. Provide compression rings and spacers as required, to achieve proper spacing relationship between cylinder and face of door.
- C. Provide brackets, plates, and special templates to mount door closers in combination with overhead stops and holders, on narrow top rails, transom mountings, and for special ceiling and jamb conditions.
- D. Provide filler plates at existing hinge and strike mortises as required.

2.04 FINISH HARDWARE

- A. Provide hardware for each door, each pair of doors, and each set of doors, in compliance with "Hardware Set Numbers" indicated in Door Schedule on Drawings, and as specified herein.

Manufacturer's names and product designations for hardware types are listed for the purpose of establishing minimum requirements.

<u>Item</u>	<u>Quantity</u>	<u>Mfr. & Cat. No.</u>
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SET 1		
Exterior Doors (Entrance)		Base of Design
Aluminum Door:		
Continuous Hinge		Markar FM 300
Exit Device	1	Precision 2103 x 1703A

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		(with rim cylinder)
Surface mounted or concealed Door Closer	1	LCN 4040 mounted with Extra Duty Arm 4040-3077EDA or LCN 2015 (concealed)
Overhead Stop with Holder	1	Glynn-Johnson 81 Series Or approved equal.
<u>SET 2</u> Vestibule Doors		
Butts	1-1/2 Pair 5" x 4-1/2"	McKinney TA792
Pulls	1	Rockwood 130
Push Plate	1	Rockwood 71C
Surface Mounted Door Closer	1	LCN 4040 with Extra Duty Arm 4040-3077EDA with through bolts
Overhead Stop without Holder	1	Glynn Johnson 81 Series
Silencers	3	Ives SR64 Or approved equal.

<u>SET 3</u> Store Rooms		
Butts	1-1/2 pair 4-1/2"x4-1/2"	McKinney TB2714
Rim Latch	1	Yale 80
Surface Mounted Door Closer	1	LCN 4010
Pull	1	Rockwood 130
Push Plate	1	Rockwood 71C
Smoke seal		Pemko S44D Or approved equal.

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SET 4 Elevator Machine Room		
Butts	1-1/2 Pair 4-1/2"x4-1/2"	McKinney TB2714
Lockset		Sargent 8204 LW1B
Surface Mounted Door Closer	1	LCN 4014
Overhead Stop without Holder	1	Glynn Johnson 81 Series
Smoke seal		Pemko S44D
		Or approved equal.

SET 5 Rooms of Instruction		
Butts	1-1/2 pair 4-1/2"x4-1/2"	McKinney TA2714
Lockset	1	Sargent 8237 LW1B
Surface Mounted Door Closer	1	LCN 1461 DEL
Overhead Stop without Holder	1	Glynn Johnson 81 Series
Silencers	3	Ives SR64
Card Holder	1	Rockwood 651
Kick Plate	1	Ives 8400-S32D-B4E
		Or approved equal.

SET 6 Private Toilets (Without Compartments)		
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Butts	1-1/2 pair 4-1/2"x4-1/2"	McKinney TB2714
Lockset	1	Sargent 8250 LW1B
Surface Mounted Door Closer	1	LCN 1461 DEL
Overhead Stop without Holder	1	Glynn Johnson 81 Series
Silencers	3	Ives SR64
Kick Plate	1	Ives 8400-S32D-B4E Or approved equal.
SET 7		
Staff Toilets (With Privacy Compartments)		
Butts	1 pair 4-1/2"x4-1/2"	McKinney TB2714
Lockset	1	Sargent 8204 LW1B
Surface Mounted Door Closer	1	LCN 1461 DEL
Overhead Stop without Holder	1	Glynn Johnson 81 Series
Silencers	3	Ives SR64
Kick Plate	1	Ives 8400-S32D-B4E Or approved equal

2.05 KEY CONTROL SYSTEM

- A. Furnish a complete set up system with brass permanent file key tags, detachable fiber key tags, cross index cards, borrower's receipt forms, brass receipt holders, and parts and instruction manual. Keys to be stored on swinging panels within steel, wall hung, locked cabinet, or with in steel, standard metal cabinet with capacity for 150% of the number of commercial cylinders required for this Project.
1. Provide a complete cross-index system set up by key control manufacturer. Place keys on markers and hooks in the cabinet as determined by the final keying schedule.

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2.06 KEYING

- A. Obtain keying information from the Facility through the Commissioner.
- B. Furnish uncombined cylinders compatible with the existing system, with sufficient springs, cores, caps, drivers, and pin segments for combination by the Facility.
- C. If locksets and cylinders are from different manufacturers, identify and furnish the correct cams required to install the cylinder.
- D. Key locks as follows and incorporate keying schedule in the hardware schedule for approval.
 - 1. Keying shall be done by the lock company and establish factory records of key changes.
 - a. Furnish the Facility with a complete bitting list.
 - 2. All cylinders shall be construction master keyed. Provide manufacturer's special pin tumbler cylinders that permit voiding construction keys without removal of the cylinder. Furnish 6 Construction Master Keys total.
 - 3. Visual Key Control: Stamp permanent keys and cylinders with the applicable key mark for identification and "Do Not Duplicate." Do not use cut numbers.
 - 6. Ship only permanent master keys via United States Postal Service, Registered Mail, Return Receipt Requested, direct from the lock company, to: O.G.S. Design & Construction, Division of Design, Corning Tower, Empire State Plaza, Albany, NY 12242.
 - a. Ship permanent cylinders and construction keys with the locksets.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install hardware in accordance with the manufacturer's printed instructions, and adjust for smooth operation.

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1. Installation Sequence: Use proper installation sequence e.g., install overhead stops and coordinators before surface mounted door closers.
 2. Template door closers for maximum door swing by wall placement and jamb conditions. Where overhead stop prevents door from swinging to wall, template closer to exceed degree of opening allowed by overhead stop.
- B. Use proper tools and methods to prevent scratches, burrs or other defacement.
- C. After installation, cover hardware with protective cloth or paper to prevent damage during remaining construction. Remove protection upon completion.

3.02 FIELD QUALITY CONTROL

- A. Post Installation Inspection: After the hardware is adjusted for smooth operation a post installation inspection meeting will be held to assure that the hardware is installed and operating properly and to familiarize the Facility Representative with the hardware operation and maintenance. The Contractor, hardware installer, and Company Field Advisor shall attend the meeting. The Commissioner and a Facility Representative will also attend the meeting.
1. Notify the Commissioner at least 3 working days prior to the inspection so arrangements can be made to have a Facility Representative participate in the inspection.
 2. Secure the services of a Company Field Advisor(s) for door closers, mortise locks and latches, cylinder and bit key deadlocks, electric strikes, magnetic switches, magnetic locks, exit devices, overhead stops and holders, flush bolts, coordinators to inspect and certify in writing, that their products are installed and operating properly and that the manufacturer's warranty will be in effect upon physical completion of the Work.

END OF SECTION

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SECTION 088100
GLASS AND GLAZING

PART 1 GENERAL

1.01 REFERENCES

- A. Comply with recommendations in the "Glazing Manual" of the Glass Association of North America and the "Sealant Manual" of the Flat Glass Marketing Association except as shown or specified otherwise, and except as specifically recommended otherwise by the manufacturers of the glass and glazing materials.
- B. Comply with NYC BC, Section 2406 and NYS Department of Labor requirements, Code Rule 47, Transparent Glass Doors in Mercantile Establishments and in Public and Commercial Buildings and Structures, for marking glass.
<http://www.labor.ny.gov/workerprotection/safetyhealth/sh47.shtm>

1.02 SUBMITTALS

- A. Product Data: Manufacturer's specifications and installation instructions for each type of glass and glazing material specified, and spacers and compressible filler rod.
- B. Samples:
 - 1. Glass: 12 x 12 inch pieces for each type of glass specified.
 - a. Insulating glass samples need not be hermetically sealed, but include edge construction materials.
- C. Quality Control Submittals:
 - a. Affidavit required under Quality Assurance Article.
 - b. Wired Glass: Affidavit required under Quality Assurance Article.

1.03 QUALITY ASSURANCE

- A. Compatibility of Materials: All components of the glazing system shall be manufactured or recommended

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by one manufacturer to assure the compatibility of materials.

- B. Safety Glazing Material: Type indicated, meeting requirements of ANSI Z97.1 with label on each piece.
- C. Certification:
 - 1. Affidavit by the material supplier, certifying type and quality of glass furnished.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Protect glass from edge damage during handling, storage, and installation.

1.05 PROJECT CONDITIONS

- A. Environmental Requirements: Comply with glazing materials manufacturer's written recommendations regarding environmental conditions under which glazing materials can be installed.
- B. Glazing channel dimensions shown are intended to provide for necessary minimum bite on the glass, minimum edge clearance and adequate glazing material thicknesses, with reasonable tolerances. Provide correct glass size for each opening, within the tolerances and necessary dimensions required.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers specified in Section 081102 "Steel Doors and Frames". Follow the manufacturer recommendations.

2.02 GLASS

- A. Type D Glass: Tempered Float Glass; ASTM C 1048, Kind FT, Condition A, Type I, Class 1, tempered by the manufacturer's standard process (after cutting to final size).
 - 1. Thickness: 1 inch.
- B. Type G Glass: Clear Fire-Rated Glass (No Wire): Fire Lite distributed.

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1. Surface Condition: Standard (unpolished surfaces).
2. Classification Mark Location: Lower right corner.

2.03 GLAZING MATERIALS

- A. Type 12 Glazing Material: Molded Neoprene Glazing Gaskets; molded or extruded neoprene gaskets of the profile and hardness required for watertight construction; ASTM D 2000 designation 2BC 415 to 3BC 620.
- B. Type 14 Glazing Material: Pure silicone caulk, closed cell PVC tape, or DAP 33 putty as recommended by Technical Glass Products to comply with U.L. Listing.
- C. Colors: For exposed materials provide color as indicated or, if not indicated, as selected by the Director from the manufacturer's standard colors. For concealed materials, provide any of the manufacturer's standard colors.
- D. Setting Blocks: Neoprene, 70-90 durometer hardness, with proven compatibility with sealants used.
- E. Spacers: Neoprene, 40-50 durometer hardness, with proven compatibility with glazing materials used.
- F. Compressible Filler Rod: Closed-cell or waterproof-jacketed rod stock of synthetic rubber or plastic foam, proven to be compatible with glazing materials used, flexible and resilient, with 5-10 psi compression strength for 25 percent deflection.
- G. Cleaners, Primers and Sealers: Type recommended by glazing material manufacturer.

PART 3 EXECUTION

3.01 PREPARATION

- A. Clean the glazing channel, or other framing members to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to the

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substrate. Remove lacquer from metal surfaces wherever elastomeric sealants are used.

- B. Inspect each piece of glass immediately before installation, and eliminate pieces which have observable damage or face imperfections.
- C. Apply primer or sealer to joint surfaces wherever recommended by sealant manufacturer.

3.02 INSTALLATION

- A. Each installation shall withstand normal temperature changes, wind loading, and impact loading (for operating sash and doors) without failure of any kind including loss or breakage of glass, failure of sealants or gaskets to remain watertight and airtight, deterioration of glazing materials and other defects in the Work.
- B. Install glass in accordance with the standards detailed in the "Glazing Manual" of the Glass Association of North America and the "Sealant Manual" of the Flat Glass Marketing Association except as shown and specified otherwise, and except as specifically recommended otherwise by the manufacturers of the glass and glazing materials.
- C. Unify appearance of each series of lights by setting each piece to match others as nearly as possible. Inspect each piece and set with pattern, draw and bow oriented in the same direction as other pieces.
- D. Install glazing materials in accordance with the manufacturer's printed instructions.

3.03 GLAZING

- A. Provide spacers inside and out, and of proper size and spacing, for all glass sizes larger than 50 united inches, except where gaskets are used for glazing. Provide 1/8 inch minimum bite of spacers on glass and use thickness equal to sealant width, except with sealant tape use thickness slightly less than final compressed thickness of tape.
- B. Voids and Filler Rods: Prevent exudation of sealant or compound by forming voids or installing filler

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rods in the channel at the heel of jambs and head (do not leave voids in the sill channels) except as otherwise indicated, depending on light sizes, thickness and type of glass, and complying with manufacturer's recommendations.

- C. Do not cut, seam, nip, or abrade glass which is tempered, heat strengthened, or coated.
- D. Force glazing materials into channel to eliminate voids and to ensure complete "wetting" or bond of glazing material to glass and channel surfaces.
- E. Tool exposed surfaces of glazing sealants and compounds to provide a substantial "wash" away from the glass. Install pressurized tapes and gaskets to protrude slightly out of the channel, so as to eliminate dirt and moisture pockets.
- F. Where wedge-shaped gaskets are driven into one side of the channel to pressurize the sealant or gasket on the opposite side, provide adequate anchorage to ensure that gasket will not "walk" out when subjected to dynamic movement. Anchor gasket to stop with matching ribs, or by proven adhesives, including embedment of gasket tail in cured heel bead.
- G. Gasket Glazing: Miter cut and bond ends together at corners where gaskets are used for channel glazing, so that gaskets will not pull away from corners and result in voids or leaks in the glazing system.

3.04 CURE, PROTECTION AND CLEANING

- A. Cure glazing materials in accordance with manufacturer's printed instructions and recommendations, to obtain high early bond strength, internal cohesive strength, and surface durability.
- B. Mark glazed openings immediately upon installation of glass by attaching crossed streamers to framing. Do not apply markers of any type to surfaces of glass.
- C. Replace glass included in the work which is broken, or otherwise damaged, from the time Work is started at the site until the date of physical completion.
- D. Maintain glass in a reasonably clean condition until date of physical completion.

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1. Clean and trim excess glazing material from the glass and stops or frames promptly after installation.
- E. When directed, or just before the project is turned over to the State, remove dirt and other foreign material and wash and polish glass included in the work on both sides.

3.05 MARKING DECALS

- A. Install two marking decals on each transparent glass door, and on each transparent glass sidelight which is wider than 20 inch between stiles. Locate decals midway between stiles 34 inch and 64 inch above the floorline. Refer to Code Rule 47 for all other marking decal requirements.

END OF SECTION

SECTION 08 91 00

STATIONARY METAL WALL LOUVERS

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Dampers: Section 23 33 13.
- B. Metal Ductwork: Section 23 31 13.
- C. Joint Sealers: Section 07 92 00.

1.02 SUBMITTALS

- A. Shop Drawings: Show fabrication details and connections to adjacent Work.
- B. Product Data: Catalog cuts, specifications, and installation instructions for louver type specified.

1.03 QUALITY ASSURANCE

- A. Louvers shall be rated by AMCA (Air Movement and Control Assoc.).

PART 2 PRODUCTS

2.01 ALUMINUM LOUVERS

- A. Type: Stationary drainable blade extruded louvers, 6 inches deep, of aluminum alloy required for the indicated finish.
 - 1. Drainable blades formed with a drain gutter in each blade, positioned at approximately 37 degree angle and spaced approximately 4-1/2 inch centers.
 - 2. Frames formed with downspouts in each jamb and mullion.
 - 3. Maximum air velocity below point of zero water penetration velocity.
 - 4. Maximum pressure drops:
 - a. 0.13 inch w.c. exhaust louvers.
 - b. 0.09 inch w.c. intake louvers.
- B. Fabrication: Form frames with mitered or coped members, welded or riveted and soldered joints.

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Form ends of blades flat against frame jamb and weld, or rivet and solder blades to frame at each end to ensure watertight joints. Reinforce units with concealed plates, angles, tees or other shapes to form a rigid unit. Fabricate louvers with horizontal and vertical mullions where louver openings exceed 60 inches in any direction. Allow for expansion and contraction.

- C. Finishes: Comply with the Metal Finishes Manual of the National Assoc. of Architectural Metal Manufacturers except as otherwise indicated.
 - 1. Mill finish.
 - 2. Shop primed, minimum 1 mil thickness.
 - 3. 70 percent "Kynar 500" finish, color as selected.
 - 4. Baked enamel, minimum 1 mil thickness, color as selected.
 - 5. Clear anodized (AA-C22A41).
 - 6. Color anodized (AA-C22A42), color as selected.
 - 7. Protect exposed factory finished surfaces prior to shipping.
- D. Sills: Same material and finish as the louvers.

2.02 STEEL LOUVERS

- A. Type: Stationary formed galvanized sheet metal louvers, formed of not less than 20 gage steel.
- B. Fabrication: Form frame with mitered or coped galvanized steel members and with continuously welded or riveted and soldered joints. Set blades at 45 degrees unless otherwise indicated. Form ends of blades flat against frame jamb and weld or rivet and solder joints to ensure that joints will be watertight. Reinforce units with concealed plates, angles, tees or other shapes to form a rigid unit.
- C. Finishes:
 - 1. Factory primed, minimum 1 mil thickness.
 - 2. 70 percent "Kynar 500", color as selected.
 - 3. Baked enamel, minimum 1 mil thickness, color as selected.
- D. Sills: Same material and finish as the louvers.

2.03 LOUVER SCREENS

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- A. Fabricate removable screen frames of the same metal and finish as the louvers. Locate screens on the inside face of the louvers, unless otherwise indicated. Secure screens to louver frames with machine screws at each corner and spaced 12 inches oc.
- B. Bird Screens:
 - 1. Galvanized 0.625 steel wire, 1/2 inch mesh.
 - 2. Anodized 0.064 aluminum wire, 1/2 inch mesh.
- C. Insect Screens:
 - 1. Anodized aluminum wire, 18 x 14 mesh.
 - 2. Copper or bronze wire, 18 x 14 mesh.

2.04 BLOCK AND BRICK VENTS

- A. Block/Brick Vents: Extruded or cast aluminum masonry size units, minimum 0.125 inch thick with 1/4 inch structural ribs. Provide aluminum insect screening secured to the interior face of the vent.

2.05 FASTENERS AND ANCHORS

- A. Bolts, Nuts, Lags, Washers, Screws and Anchors: Same material as items being installed unless otherwise indicated; types, gages and lengths to suit unit installation conditions; galvanized steel, aluminum or stainless steel for exterior locations or for items anchored to exterior walls.

2.06 MISCELLANEOUS

- A. Bituminous Paint: SSPC-PAINT 12 (Cold applied asphalt mastic).

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install the Work of this Section in accordance with the manufacturer's printed instructions, except as shown otherwise on the Drawings.
- B. Install units plumb, level and in proper alignment with adjacent construction.
- C. Form tight joints with exposed connections accurately fit together.

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- D. Use concealed anchorages wherever possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to form a weathertight connection.
- E. Where louvers are in contact with concrete, masonry or a dissimilar metal, coat the contacting surface with a heavy coat of bituminous paint.
- F. Clean louvers after installation. Remove dirt, dust, and grime.

END OF SECTION

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SECTION 092116
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 DEFINITIONS

- A. Sheet Steel Gages: US Standard.
- B. Gypsum Board Terminology: ASTM C 11 - Standard Terminology Relating to Gypsum and Related Building Materials and Systems.

1.02 SUBMITTALS

- A. Product Data: Catalog sheets, specifications, and installation instructions for each item specified.

1.03 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer.
- B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Stack gypsum panels flat to prevent sagging.

1.04 PROJECT CONDITIONS

- A. Environmental Requirements: Comply with gypsum board manufacturer's printed temperature and ventilation requirements during application and finishing. Ventilate installation areas to relieve excess moisture.

PART 2 PRODUCTS

2.01 FRAMING

- A. Studs, Tracks, and Furring: ASTM C 645; 20 gage (minimum base metal thickness 0.0179 inch) galvanized steel, with additional framing members, reinforcing, accessories, and anchors necessary for the complete framing system.

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2.02 GYPSUM BOARD

- A. Standard Gypsum Board: ASTM C 1396; long edges as follows:
 - 1. Long Edges: Tapered.

2.03 FASTENERS

- A. Steel Drill Screws: ASTM C 1002; gypsum board manufacturer's recommended types and sizes for substrates involved.
- B. Laminating Adhesive: Gypsum board manufacturer's recommended type for substrates involved.
- C. Expansion Anchors: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563; and, where indicated, flat washers.
- D. Toggle Bolts: Tumble wing type.
 - 1. Wing Body: AISI 1008-1010 or equivalent cold rolled steel.
 - 2. Trunnion Nut: 1/4 inch thru 3/8 inch AISI 1010 steel; 1/2 inch Zamac alloy.
 - 3. Screw: Carbon steel.

2.04 TRIM

- A. Interior Trim: ASTM C 1047.
 - 1. Material: Extruded vinyl.
 - 2. Shapes:
 - a. Cornerbead: Use at outside corners.

2.05 ACCESSORIES

- A. Sound Attenuation Blankets: ASTM C 665, Type 1; semi-rigid, mineral fiber blankets without membrane covering. Furnish blankets of thickness, density, and type tested by the gypsum board manufacturer for the required rating.
- B. Acoustical Sealant for Exposed and Concealed Joints: Nonsag, paintable, nonstaining, latex sealant complying with ASTM C 834 that effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

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2.06 JOINT TREATMENT MATERIALS

- A. Joint Tapes: ASTM C 475; plain or perforated.
- B. Joint Compound: ASTM C 475; gypsum board manufacturer's recommended dry powder or ready-mixed, either of the following:
 - 1. One Compound Treatment: One compound for both bedding and finishing joints.
 - 2. Two Compound Treatment: Compatible joint compounds; one compound for bedding and the other compound for finishing joints.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates to which gypsum board system attaches or abuts, preset steel door frames, cast in anchors, and structural framing, with installer present for compliance with requirements for installation tolerances and other conditions affecting performance of gypsum board system construction. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 CONSTRUCTION TOLERANCES

- A. Do not exceed 1/8 inch in 8 feet variation from plumb or level in any exposed line or surface, except at joints between boards do not exceed 1/16 inch variation between planes or abutting edges or ends. Shim as required to comply with specified tolerances.

3.03 STEEL FRAMING INSTALLATION

- A. Installation Standards: ASTM C 754, and ASTM C 840 requirements that apply to framing installation.
- B. Install supplementary framing, blocking, and bracing at terminations in gypsum board system to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction. Comply with details indicated and with gypsum board manufacturer's written recommendations.

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- C. Isolate partitions from structural elements as indicated to prevent transfer of structural loads or movements to partitions.
- D. Partition Framing Installation:
 - 1. Align tracks accurately at floor. Secure tracks as recommended by the framing manufacturer for the floor construction involved, except do not exceed 24 inches oc spacing for powder-driven fasteners, or 16 inches oc for other types of attachment. Provide fasteners approximately 2 inches from corners and ends of tracks.
 - 2. Position studs vertically and engage both floor and head tracks. Install studs so flanges point in the same direction and leading edge or end of each panel can be attached to open (unsupported) edge of stud flanges first. Space studs 16 inches on center, unless otherwise indicated on the Drawings. Fasten studs to track flanges with screws or by crimping.
 - 3. Install additional studs to support inside corners at partition intersections and corners, and to support outside corners, terminations of partitions.

3.04 ACOUSTICAL ACCESSORIES INSTALLATION

- A. Sound Attenuation Blankets: Install in partitions tight within spaces, around cut openings, behind and around electrical and mechanical items within or behind partitions, and tight to items passing through partitions.
- B. Acoustical Sealant: ASTM C 919; install continuous bead of acoustical sealant at gypsum board perimeter. Seal wherever gypsum board abuts dissimilar materials. Seal spaces between gypsum board and all penetrating items. Seal sides and backs of electrical and mechanical items.

3.05 GYPSUM BOARD INSTALLATION

- A. Install gypsum board in the most economical direction, of maximum lengths to minimize end butt joints. Where unavoidable, locate end butt joints as far from center of walls or ceilings as possible.

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- B. Install gypsum board with face side out. Butt boards together at edges and ends over firm bearing with not more than 1/16 inch of open space between boards. Do not force into place.
- C. Fasteners: Fasten gypsum board to supports and furring with steel drill screws of required size and spacing as recommended by the gypsum board manufacturer.
- D. Provide additional framing and blocking required to support gypsum board at openings.
- E. Wood Supports: Provide "floating" interior angle construction between gypsum board at interior corners.
- F. Reinforce joints formed by tapered edges, butt edges, and interior corners or angles with joint tape.

3.06 TRIM INSTALLATION

- A. Coordinate installation of trim progressively with gypsum board installation where trim is of type required to be installed prior to, or progressively with installation of gypsum board.
 - B. Securely fasten trim pieces in accordance with manufacturer's printed instructions.
 - C. Install cornerbeads at external corners. Install LC-Bead (J-Bead) beads at unprotected (exposed) edges and where gypsum board abuts dissimilar materials. Use single unjointed lengths unless otherwise approved by the Commissioner.
 - D. Comply with joint compound manufacturer's recommended drying time for the relative humidity and temperature at time of application. Allow minimum of 24 hours drying time between applications of joint compound.
- A. General: Finish panels to levels indicated below, in accordance with ASTM C 840, for locations indicated.
- 1. Level 3 Finish: Joints and angles, provide tape embedded in joint compound and provide two separate applications of joint compound over all joints, angles, and fastener heads. Accessories shall be covered with two

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separate coats of joint compound. Joint compound to be smooth and free of tool marks and ridges. Cover the prepared surface with a drywall primer prior to the application of the final decoration.

END OF SECTION

SECTION 092214
FURRING FOR GYPSUM BOARD CEILINGS

PART 1 GENERAL

1.01 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

- A. Concrete Inserts: Installed under the Work of Section 033000.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Gypsum Board Assembly: Section 092116.
- B. Suspended Acoustical Ceiling: Section 095300.

1.03 DEFINITIONS

- A. Gages:
 - 1. Sheet Steel: US Standard.
 - 2. Steel Wire: US Steel Wire Gage.
- B. Galvanizing: Hot dip process, unless otherwise indicated.

1.04 DESIGN REQUIREMENTS

- A. The furring system shall support the weight of the ceiling system (including finish) plus the weight of the lighting system. Additional intermediate supports (struts) and hangers shall be included as required to support the required weights.

1.05 SUBMITTALS

- A. Product Data: Manufacturer's specifications and installation instructions for the following:
 - 1. Main Beams.
 - 2. Cross Channels.
 - 3. Channel Mold.
 - 4. Cross Tees.
 - 5. Hangers.

1.06 QUALITY ASSURANCE

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- A. Fire Resistive Rated Applications: Provide UL listed or ASTM E 119 tested materials, accessories, and application procedures to comply with the rating indicated.

1.07 STORAGE

- A. Protect metal items against distortion and rusting.

1.08 PROJECT CONDITIONS

- A. Sequencing: Coordinate furring with adjoining Work.
1. Coordinate delivery of items to be cast in poured concrete, to avoid delay.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Subject to compliance with requirements, provide products of one of the specified manufacturers
1. Dietrich Metal Framing
 2. Millicor Division; Inryco Inc.
 3. Phillips Manufacturing Co.
 4. Gold Bond Building Products Division; National Gypsum Co.
 5. United States Gypsum Co.
- Or approved equal.

2.02 MATERIALS

- A. Main Beams: Minimum 24 gage, 1-1/2 inches by 15/16 inch galvanized steel tee sections, slotted 8 inches O.C. for intersecting cross channels or cross tees and 4 inches oc for hangers, with integral splices stamped at each end.
1. Minimum Moment of Inertia: .0280 in⁴.
 2. Minimum Section Modulus: .0290 in³.

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- B. Cross Channels: Minimum 25 gage, 2-7/8 inches by 7/8 inch galvanized steel hat shaped sections, with stamped locks on each end to fit corresponding slots in main beams and knurled screw surfaces.
- C. Channel Mold: Minimum 25 gage, 1 inch by 1 inch by 1/2 inch galvanized steel channel sections.
- D. Cross Tees (For Fire Rated Ceiling Systems): Minimum 25 gage galvanized steel tee sections, with stamped locks on each end to fit corresponding slots in main beams.
- E. Hangers:
 - 1. Minimum Size: As specified or shown on the Drawings; if not indicated, comply with minimum size requirements of ASTM C 841 for maximum ceiling area to be supported.
 - 2. Flat Type: 3/16 x 1 inch mild steel straps, galvanized or painted with black asphaltum paint, punched or drilled for 3/8 inch diameter bolts.
 - 3. Rod Type: Galvanized mild steel pencil rods.
 - 4. Wire Type: Type 302 stainless steel.
 - 5. "T" Type: 16 gage galvanized steel hangers; Fehr Bros. Mfgs., Inc.'s "T-Hangers".
- F. Inserts: Hohmann and Barnard's No. HD Threaded Insert for 1/2 inch diameter bolt.
- G. Clips for Attaching Hangers to Steel Joists: Galvanized steel clips or clamps specifically designed for this purpose, which do not depend on friction to hold device in place. Use of drive-on clips or clamps will not be permitted.
- H. Welded Studs: Low carbon steel copper flashed studs, 1/4 - 20 UNC, automatic short-cycle welded with a transformer-rectifier power source. When surface on which studs are installed is to receive fireproofing, furnish studs of length to extend one inch below fireproofing.
- I. Expansion Anchors: Double cinch type, of soft metal alloy.
- J. Bolts: 3/8 inch diameter, length as required for full threads for nut.

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PART 3 EXECUTION

3.01 INSTALLATION

- A. General:
1. Install Work of this section in accordance with the manufacturer's printed instructions, except as otherwise indicated.
 2. Do not bridge expansion joints with grillage.
- B. Hangers: Unless otherwise shown, install hangers as follows:
1. Attachment to Poured Concrete Slabs: Embed a part or member of hanger assembly in the concrete in a manner to develop full strength of hanger.
 2. Attachment to Structural Steel Framing: Clinch hanger around top flange of steel framing member approximately 135 degrees. If framing member supports roof planks or precast slabs, bolt hanger to center of web or weld to bottom flange. Where applicable, hanger wires may be directly double wound around steel members with wire twisted together securely.
 3. Attachment to Steel Joists: Secure hanger with special clip or clamp designed for such use. Where applicable, hanger wires may be directly double wound around steel members with wire twisted together securely.
 4. Attachment to Precast Tees, Slabs and Planks: Insert "T" hangers through joints between the units. Where concrete fill is required, lay out and install hangers prior to placing fill.
 5. Attachment to Steel Decks: Secure hangers with welded studs. Locate studs as close to deck supports as possible. Install studs in accordance with manufacturer's instructions. After installation, clean stud welds and repair the affected areas of deck and studs with cold galvanizing compound. Attach hangers to stud bolts with double nuts.
 6. Attachment to Wood Framing (Except Trusses): Secure hanger with threaded fastener.
 7. Attachment to Wood Trusses: Double wind hanger wire around bottom chord member and twist wire together securely.

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- C. Openings: Frame openings, including openings for items provided with extra cross channels or cross tees unless otherwise indicated.
- D. Furring: Erect furring to form a true plane, or curved surface where so designed, and securely fasten in place. Set cross channels or cross tees perpendicular to main beams.
- E. Suspended Ceilings:
 - 1. Form suspended ceilings with hangers, channel mold, main beams, cross channels and/or cross tees.
 - 2. Attach hangers to supporting construction, spaced 4 feet oc and within 6 inches of ends of main beams. Where ducts or other items, including items provided under Related Contracts (if any), interfere with the spacing of hangers, install trapeze type hangers under the obstructing items to support ceiling hangers.
- F. Furred Ceilings: Form furred ceilings with cross channels, unless otherwise indicated.

END OF SECTION

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SECTION 093013
CERAMIC TILE

PART 1 GENERAL

1.01 REFERENCES

- A. Tile Manufacturing Standard: Comply with the requirements of ANSI "American National Standard Specifications for Ceramic Tile" (ANSI A137.1)
- B. Installation Standards: Comply with the requirements of ANSI "American Standard Specifications for the Installation of Ceramic Tile" (ANSI A108, A118 and A136), and correlating Tile Council of America (TCA) details except as shown or specified otherwise.

1.02 SUBMITTALS

- A. Product Data: Catalog sheets, specifications, and installation instructions for each of the following:
 - 1. Tile and trim units.
 - 2. Setting materials, except reinforcement, membrane, and primer.
 - 3. Grouting materials.
 - 4. Marble door thresholds.
- B. Samples:
 - 1. Tile and Grout: Each type and color required; 12 x 12 inch samples with tile mounted on braced cement backer board and grouted.
 - 2. Trim Units: Each type and shape required.
 - 3. Color Samples:
 - a. Tile manufacturer's standard range of colors and textures for each tile type required.
 - b. Grout manufacturer's standard range of colors for each grout type required.
 - 4. Marble thresholds in 6 inch lengths.
- C. Quality Control Submittals:
 - 1. Tile Grade Certificates: Furnish tile manufacturer's Master Grade Certificate bearing the manufacturer's certification for each shipment, type and composition of tile.
- D. Contract Closeout Submittals:
 - 1. Maintenance Data: Tile and grout manufacturer's recommended cleaning and stain removal methods and materials.

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1.03 QUALITY ASSURANCE

- A. Manufacturer:
 - 1. Obtain each color, grade, finish, type, composition, and variety of tile from one source with resources to provide products from the same production run for each contiguous area of consistent quality in appearance and physical properties without delaying the Work.
 - 2. Obtain ingredients of a uniform quality for each mortar, waterproof membrane, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.
- B. Certifications:
 - 1. Tile manufacturer's Master Grade Certification for each shipment of tile.
- C. Performance Criteria:
 - 1. The following criteria are required for products included in this section:
 - a. All ceramic flooring must be certified as compliant with the FloorScore standard by an independent third-party.
 - b. Tile setting adhesives and grout must not exceed the volatile organic compound (VOC) content limits established in South Coast Air Quality Management District (SCAQMD) Rule 1168.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement of ANSI A137.1 for labeling sealed tile packages.
- B. Prevent damage or contamination to materials by water, freezing, foreign matter, and other causes.

1.05 PROJECT CONDITIONS

- A. Environmental Requirements: Do not install tile until construction in spaces is completed. Set and grout tile when ambient temperature is 50 degrees F (10 degrees C) or higher and humidity conditions are being maintained. Substrate must be free of ice. All work to meet material manufacturer's recommendations.

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1.06 ATTIC STOCK

- A. Extra Materials: Furnish extra tile, equal to 3 percent of the tile installed, of each type, composition, pattern, size and color of tile required. Also furnish a proportionate number of trim units. Place extra materials packaged with protective covering in storage at the site where directed.

PART 2 PRODUCTS

2.01 TILE

- A. Glazed Wall Tile: Complying with Section 6.1, ANSI A 137.1; Standard Grade, and the following requirements:
1. Module Size: 4-1/4 by 4-1/4 inches.
 2. Thickness: 5/16 inch.
 3. Face: Plain with modified square edges or cushion edges.
 4. Face: Plain with manufacturer's standard edges.
 5. Finish: Bright glaze.
 6. Mounting: Factory back-mounted.
- B. Unglazed Paver Tile: Complying with Section 5.3, ANSI A 137.1; Standard Grade, and the following requirements:
1. Composition: Porcelain.
 2. Facial Dimensions: 11-13/16 by 11-13/16 inches.
 3. Thickness: 1/4 inch.
 4. Face: Plain with square edges.
- C. Trim Units: Furnish necessary trim shapes of same material, grade, type, and finish as flat tile unless otherwise indicated. Furnish trim for head, jambs and sills of openings, external corners, and the following:
1. Base for Portland Cement Mortar Installations: Coved.
 2. Base for Thin-Set Mortar Installations: Straight.
 3. Tapered Transition Tile: Shape designed to effect transition between thickness of tile floor and adjoining floor finishes of different thickness, tapered to provide a reduction in thickness from 1/2 to 1/4 inch across nominal 4-inch dimension.
- D. Colors: Tile colors shall be as indicated on the Drawings, or if not indicated, as selected by the Commissioner from tile manufacturer's standard range of colors.
- E. Waterproofing for Thin Set Tile: Comply with ANSI A118.10 and manufacturer's recommendations.

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2.02 SETTING MATERIALS

- A. Portland Cement Mortar: Complying with ANSI A 108.1, or ANSI A 108.5 in combination with ANSI A 108.1.
 - 1. Portland Cement: ASTM C 150, Type 1.
 - 2. Sand: ASTM C 144.
 - 3. Hydrated Lime: ASTM C 206 or ASTM C 207, Type S.
 - 4. Water: Clean and potable.
- B. Dry-Set Mortar: Complying with ANSI A 118.1, and meeting the requirements for setting the particular type of tile to be set with the mortar.
- C. Epoxy Mortar: Complying with ANSI A 118.3, chemical resistant, and water cleanable before setting.
- D. Primer: As recommended by the mortar/adhesive manufacturer.

2.03 GROUTING MATERIALS

- A. Dry-Set Grout: Compound of Portland cement and additives, factory blended for the type of tile to be grouted, and complying with ANSI A 118.6.
- B. Colors:
 - 1. As selected by the Commissioner from grout manufacturer's standard range of colors.

2.04 MISCELLANEOUS MATERIALS

- A. Metal Edge Strips: White zinc-alloy terrazzo strips, 1/8 inch wide at top edge with integral provision for anchorage to mortar bed or substrate, unless otherwise indicated.
- B. Trowelable Underlayments and Patching Compounds: Latex-modified, portland-cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

2.05 MARBLE DOOR THRESHOLDS

- A. Marble: Sound Group A marble equal to any of the following varieties and color ranges:
 - 1. Vermont Champlain Black or Highland Danby (Gray).
 - 2. Missouri Ozark (Gray) or Georgia Solar Gray.
 - 3. Tennessee Edward Pink, Marmor (Pink), Craig Pink, or Cedar Tavernelle (Red-Reddish Brown).

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- B. Fabricate thresholds to equal width of door jambs, with true planes, edges straight, and free of chipped or broken arises and corners.
 - 1. Raised Thresholds: Depth shall be as required to finish 1/2 inch above finished tile floor and have a minimum thickness of 1-1/4 inches, unless otherwise shown. Bevel exposed edge arises 1/4 by 1/4 inch.
 - 2. Flush Thresholds: 7/8 inch thick, unless otherwise shown.
 - 3. Finish: Honed finish on exposed faces and edges.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
- B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Provide concrete substrates for tile floors installed with dry-set or latex-portland cement mortars that comply with flatness tolerances specified in referenced ANSI A 108 series of tile installation standards for installations indicated.
 - 1. Use trowelable leveling and patching compounds per tile-setting material manufacturer's written instructions to fill cracks, holes, and depressions.
 - 2. Remove protrusions, bumps, and ridges by sanding or grinding.
- B. Protection: Protect adjacent surfaces before tilework begins.
- C. Cleaning: Clean substrate surfaces in accordance with applicable reference standards and manufacturer's installation instructions.

3.03 INSTALLATION

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- A. Install ceramic tile in accordance with ANSI A 108.1 thru ANSI A 108.7, as applicable for type of tile and method of installation, and in accordance with the printed installation instructions of the tile and setting material manufacturers.
 - 1. Neutralize and seal substrate as required by the mortar/adhesive manufacturer's instructions.
 - 2. Mix and apply proprietary setting and grouting materials in compliance with the manufacturer's instructions.

- B. Setting Beds:
 - 1. Walls: Portland cement mortar.
 - 2. Walls: Dry-set mortar.
 - a. Concrete Unit Masonry Walls: Apply a leveling coat of latex-Portland cement mortar, or an underpayment material recommended by the setting material manufacturer, to form true planes for thin-bed setting material prior to setting tile.
 - 3. Walls: Latex-Portland cement mortar.
 - 4. Floors: Portland cement mortar.
 - 5. Floors: Dry-set mortar.
 - 6. Floors: Latex-Portland cement mortar.
 - 7. Floors: Epoxy mortar.

- C. Joint Pattern: Install tile in grid pattern with 1/16 inch joint width, unless otherwise indicated.

- D. Layout tilework on principal walls, with tilework field centered in both directions on the floor and lengthwise on walls in each space, so that no tile less than one-half full size will occur, unless otherwise approved to suit the features of the space. Align joints when adjoining tiles are the same size. Maintain uniform joint width.

- E. Extend tilework into recesses and under equipment and fixtures, to form a complete covering without interruptions, except as otherwise shown. Terminate tilework neatly at obstructions, edges, and corners without disruption of pattern or joint alignments.

- F. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

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- G. Edge Strips: Install metal edge strips at edge of tile meeting other types of flooring, unless otherwise indicated.
- H. Grouting: Comply with ANSI A 108.10 or 108.6, as applicable for type of grout, and manufacturer's installation instructions. Make joints watertight, and without voids, cracks and excess grout. Damp cure in accordance with reference standards and manufacturer's instructions when applicable.
 - 1. Walls:
 - 2. Floors:
- I. Marble Door Thresholds: Set marble thresholds in a full bed of the same type of setting material specified for adjoining tilework, unless otherwise indicated.

3.04 ADJUSTING

- A. Check the tilework installation. Remove defective tile and retile. Leave finished installation free of cracked, chipped, broken, unbonded, and otherwise defective tilework.

3.05 CLEANING

- A. On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter. Comply with grouting specifications and with grout manufacturer's printed instructions for materials and method.
 - 1. Remove latex-portland cement grout residue from tile as soon as possible.
 - 2. Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's written instructions, but no sooner than 10 days after installation. Protect metal surfaces, cast iron, and vitreous plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning.
- B. Clean and polish marble door thresholds. Remove stains and other defacement.

3.06 PROTECTION

- A. Apply heavy kraft paper, or other approved heavy protective covering, masked in place over tilework to prevent staining, damage, and wear.

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- B. Prohibit foot and wheel traffic on newly tiled areas for seven days after completion of installation unless otherwise approved by the Commissioner.
- C. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

END OF SECTION

SECTION 09 53 00
SUSPENDED ACOUSTICAL CEILING SYSTEMS

PART 1 GENERAL

1.01 REFERENCES

- A. ASTM C 635 - Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
- B. ASTM C 636 - Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
- C. ASTM E 1414 - Standard Test method for Air-born Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum.
- D. ASTM E 1264 - Standard Classification for Acoustical Ceiling Products.
- E. Ceilings and Interior Systems Contractors Association (CISCA) Acoustical Ceilings: Use and Practice.
- F. UL - Fire Resistance Directory and Building Material Directory.

1.02 SYSTEM DESCRIPTION

- A. Suspended Ceiling System consisting of main runners and cross runner tees snapped together to form modules or grids for the installation of lay-in acoustical tiles or panels, air diffusers, and light fixtures.
- B. Structural Performance and Suspension System Types:
 - 1. Type ID/EG: Intermediate duty, direct hung, exposed grid. (Minimum load carrying capability of main runner: 12 lb/lin ft).

1.03 SUBMITTALS

- A. Product Data: Manufacturer's catalog sheets, specifications, and installation instructions for the following:
 - 1. Each suspension system type specified.
 - 2. Acoustical units specified.
 - 3. Integral access units.
- B. Samples:

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1. Suspension System Materials: 12 inches long of exposed suspension system, component members, including moldings, for each color and system type required.
 2. Acoustical Units: 12 inches square, each type, pattern, and color specified.
- C. Quality Control Submittals:
1. Certification: Manufacturer's written statement, certifying that the suspension system meets or exceeds the specified structural requirements.
- D. Contract Closeout Submittals:
1. Maintenance Instructions: Two copies of the manufacturer's printed recommendations for cleaning and refinishing the acoustical units. Include precautions regarding materials and methods which may be detrimental to finish and acoustical efficiency.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical units and suspension system components to the Project Site in original, unopened packages and store them in a fully enclosed space protected against damage from moisture, direct sunlight, surface contamination, and other causes.
- B. Open ends of acoustical unit packages 24 hours before installation to stabilize moisture content and temperature.
- C. Handle acoustical units carefully to avoid chipping edges or damaging units in any way.

1.05 PROJECT CONDITIONS

- A. Environmental Requirements: Comply with acoustical units manufacturer's printed temperature and ventilation requirements before, during, and after installation.
- B. Space Enclosure: Do not install interior acoustical units until space is enclosed and weatherproof, wet

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work in spaces is completed, and work above ceilings is complete.

1.06 ATTIC STOCK

- A. Furnish extra materials described below to match products installed, are packaged with protective covering for storage, and are identified with appropriate labels. Furnish quantities equal to 2 percent of acoustical units and exposed suspension system components installed.

PART 2 PRODUCTS

2.01 METAL SUSPENSION SYSTEM MATERIALS

- A. Provide manufacturer's standard metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable ASTM C 635 requirements.
- B. Recycled Content: Provide products made from steel sheet with average recycled content such that post-consumer recycled content plus one-half of pre-consumer recycled content is not less than 25 percent.
- C. Grid Materials:
1. Double-web design main runners and cross-runner tees roll-formed from electrogalvanized cold rolled sheet steel with prefinished steel caps on flanges.
 - a. Exposed Tees: 9/16 inch wide caps minimum and 15/16 inch wide caps maximum.
 2. Grid Finish: Prepainted white or color as selected from manufacturer's standard colors.
- D. Accessories:
1. Wall Moldings and Trim: Steel or extruded aluminum of types and profiles indicated, or if not indicated, manufacturer's standard prefinished moldings for edge penetrations that fit type of edge detail and suspension indicated.
 2. Hold-down Clips: Designed to hold acoustical units in place and, where required, of special type to provide access to plenum.

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3. Acoustical Sealant: Manufacturer's recommended paintable, permanently flexible shrink and stain resistant sealant.

E. Attachment Devices:

1. Hanger Clips: Galvanized steel clips or clamps specifically designed for attachment to structural steel. Drive-on clips or clamps which depend on friction to hold the device are not acceptable.
2. Welded Studs: Low carbon steel copper flashed studs, 1/4 - 20 UNC, automatic short-cycle welded to a transformer-rectifier power source. When surface on which studs are to receive fireproofing, furnish studs of length to extend one inch below fireproofing.
3. Wire Hangers, Braces, and Ties: Galvanized carbon steel, soft temper; prestretched. Yield stress at least 3 times design load but not less than 12 gage, .106 diameter.
4. Hanger Rods: Mild steel, zinc coated, or protected with rust inhibitive paint.
5. Flat Hangers: Mild steel, zinc coated, or protected with rust inhibitive paint.
6. Hanger Tees: Galvanized steel, 16 gage T-hangers for attachment to precast concrete decks.
7. Expansion Anchors: Double cinch type, of soft metal alloy.
8. Bolts: 3/8 inch diameter, length as required for full threads of nut.
9. Miscellaneous Fasteners: Bolts, screws, and other fasteners recommended by suspension system manufacturer and necessary to install the Work.

2.02 ACOUSTICAL UNIT MATERIALS

- A. Standard for Acoustical Units: Manufacturer's standard units of configuration indicated that comply with ASTM E 1414 and ASTM E 1264, conforming to the following:
 1. Noise Reduction Coefficient (NRC) Range: 0.50 - 0.75.
 2. Ceiling Attenuation Class (CAC) Range: 30 - 34.
 3. Light Reflectance Coefficient (LR): 0.75 or greater.
 4. Recycled Content: Provide acoustical panels with recycled content such that postconsumer recycled

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content plus one-half of pre-consumer content constitutes a minimum of 45-70% by weight.

- B. Acoustical Units:
 - 1. Mineral base with factory applied painted finish. (Type III).
- C. Tile Dimensions and Edge Details:
 - 1. Size: 24"x24".
 - 2. Edges: Beveled, spline.
- D. Pattern Description:
 - 1. Color: White.
 - 2. Finish: Vinyl Latex Paint.
- E. Integral Access Units: Provide 12 x 24 inch access units, formed from special suspension members and matching tile with edges modified to allow removal.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates and structural framing scheduled to receive the ceiling system for compliance with requirements specified. Do not install the Work until unsatisfactory conditions are corrected.

3.02 INSTALLATION OF SUSPENSION SYSTEM

- A. Install acoustical ceiling suspension system to comply with installation standard ASTM C 636, in accordance with the manufacturer's printed instructions, and CISCA "Ceiling System Handbook".
- B. Lay-out system to a balanced design with edge units no less than 50 percent of acoustical unit size.
- C. Hang suspension system independent of walls, columns, ducts, pipes, and conduit.
- D. Hangers:
 - 1. Attach hangers to supporting construction, spaced 4 feet or maximum and within 6 inches of ends of main beams. Where ducts or other items, including items provided under related contracts (if any), interfere with the spacing of hangers, install

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trapeze type hangers under the obstructing items to support ceiling hangers.

2. Wrap hanger wire ends a minimum of three times horizontally, forming tight loops and turning ends upward.
3. Do not kink or bend hangers as a means of leveling components.

E. Attachment of Hangers to Supporting Construction:
Unless otherwise shown, secure the hangers to the construction as follows:

1. Attachment to Existing Cast-in-Place Concrete: Attach hangers to clip angles, fastened to the concrete with expansion bolts or drive pins.
2. Attachment to Structural Steel Framing: Clinch hanger around top of flange of steel member approximately 135 degrees. If framing member supports roof planks or precast slabs, bolt hanger to center of web or weld to bottom flange. Where applicable, hanger wires may be directly double wound around steel members with wires twisted together.
3. Attachment to Steel Joists: Secure hanger with special clip or clamp designed for such use. Where applicable, hanger wires may be directly double wound around steel members with wires twisted together.
4. Attachment to Precast Tees, Slabs, and Planks: Insert "T" hangers through joints between the units. Where concrete fill is required, lay out and install hangers prior to placing fill.
5. Attachment to Steel Decks: Secure hangers with welded studs. Locate studs as close to the deck supports as possible. Install studs in accordance with manufacturer's printed instructions. After installation, clean stud welds and repair the affected areas of deck and studs with cold galvanizing compound. Attach hangers to studs with double nuts.
6. Attachment to Wood Framing (Except Trusses): Secure hangers with threaded fasteners.
7. Attachment to Wood Trusses: Double wind hanger wire around bottom chord member and twist wire together securely.

F. Suspension System Installation Tolerances:

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1. Form right angles at intersections of main and cross runners.
 2. Install main runners level to within 1/8 inch in 12 feet. Install cross runners to within 1/32 inch of the required center distances (non-cumulative beyond 12 feet).
 3. Align vertical distance of exposed surfaces between intersecting runners to within 0.015 inch.
 4. Limit horizontal gaps in exposed surfaces of intersecting or abutting members to within 0.020 inch.
- G. Wall Moldings and Trim: Install moldings and trim of type indicated where ceilings intersect vertical surfaces. Use manufacturer's recommended fasteners suited for secure attachment to the particular substrate.
1. Sealant Bed: Apply continuous ribbon of acoustical sealant, concealed on back of vertical leg of moldings before they are installed.
 2. Screw attach moldings to substrate at intervals not over 16 inches oc and not more than 3 inches from ends, leveling with ceiling suspension system to tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.

3.03 INSTALLATION OF ACOUSTICAL UNITS

- A. Install acoustical units in accordance with the manufacturer's printed instructions, unless otherwise shown or specified.
1. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
 2. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
 3. Scribe and cut acoustical units to fit accurately at borders and at penetrations.
 4. Where tiles are not supported by suspension members, install splines at unsupported joints.
 5. Keep border tiles in compression by inserting spring steel spacers between tiles and moldings. Place one spacer bar at the center of each tile.

3.04 CLEANING AND ADJUSTING

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- A. Clean exposed surface of acoustical ceilings, including trim, wall moldings, and suspension members. Comply with manufacturer's printed instructions for cleaning and touch-up of minor finish damage.

END OF SECTION

SECTION 096519

RESILIENT FLOORING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide all vinyl composition tile, solid vinyl sheet flooring, slip retardant vinyl sheet flooring, reducer strips, transition strips, vinyl base (at resilient flooring and at carpet), interior detectable warning surfaces and other accessories noted herein.

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM), latest editions.

D2047 Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine

E84 Test Method for Surface Burning Characteristics of Building Materials.

E648 Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.

E662 Test Method for Specific Optical Density of Smoke Generated by Solid Materials.

F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring

F1303 Standard Specification for Sheet Vinyl Floor Covering with Backing

F1066 Vinyl Composition Floor Tile, Comp 1, Class 2

F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.

B. Federal Specifications (FS)

SS-W040 Wall Base: Rubber and Vinyl Plastic.

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SS-T-312 Tile, Floor: Asphalt, Rubber, Vinyl, Vinyl Composition.

L-F-475A (3)

RR-T-650B

P-F-430

- C. Where the language in any of the documents referred to herein is in the form of a recommendation or suggestion, such recommendations or suggestions shall be deemed mandatory under this contract.

1.03 SUBMITTALS

A. Product Data

Manufacturers' specifications, installation instructions, surface preparation requirements and maintenance manuals for each material specified.

B. Samples

1. For Initial Selection: Submit actual sections of resilient flooring materials, showing full range of colors and patterns available, for each type of resilient flooring required
2. For Verification, prior to installation, submit the following:
 - a. Resilient tile: Full size, each type, size and color specified:
 - 1) Light Reflectivity (L.R.): Sample tiles submitted must have light reflective values of each tile noted either by Light Reflectivity (L.R.) Sample tiles submitted must have light reflective values of each tile noted either by Stamping L.R. value on back or Stamping L.R. value on back or Printed schedule form (submit in triplicate).
 - b. Vinyl Sheet: 12 inch square section.
 - c. Base: 12 inch long sections, each type and color specified.

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- d. Feature Strip: 12 inch long section, each color selected
- f. Stair coverings: 12 inch long section of each member type.
- g. Detectable Warning Surfaces: one tile or 12" x 12" piece.

1.04 QUALITY ASSURANCE

A. Certifications

- 1. Furnish manufacturer's certification from an independent testing laboratory acceptable to authorities having jurisdiction that resilient flooring complies with the fire test performance requirements specified herein.
- 2. Furnish certification from flooring installer that the substrate surfaces have been examined and are acceptable for installation of the Work of this Section.

B. Fire Test Performance

Provide resilient flooring, treads and risers which comply with the following performance criteria as determined by an independent testing laboratory acceptable to authorities having jurisdiction.

- 1. Critical Radiant Flux (CRF): Not less than 0.45 watts per sq. cm. as per ASTM E 648.
- 2. Flame Spread: Not more than 75 as per ASTM E84. Class B 27-351
- 3. Smoke Density: Not more than 450 as per ASTM E662.

C. Slip Resistance

All flooring materials with coatings shall have a slip resistance of at least 0.60 when tested in accordance with ASTM D2047.

1.05 DELIVERY, STORAGE, AND HANDLING

PHASE II BUILDING RENOVATIONS

A. Delivery

Deliver material in good condition to the site in manufacturer's original unopened containers with label information clearly marked thereon.

B. Storage

Store materials (resilient flooring, base and adhesives) in location protected from the weather and having a minimum temperature of 68°F for at least 24 hours prior to start of laying of flooring.

1.06 PROJECT CONDITIONS

A. Environmental Requirements

Continuously heat spaces to receive flooring to a temperature of 68°F for at least 48 hours prior to flooring installation, and for 48 hours after installation. Maintain a minimum temperature of 55 deg. thereafter. Do not install products until they are at the same temperature as the spaces in which they are installed.

- B. Install resilient flooring and accessories after other finishing operations, including painting, have been completed. Do not install resilient flooring over concrete slabs until the latter has been cured and is sufficiently dry to achieve bond with adhesive as determined by manufacturer's recommended bond and moisture test. The Contractor shall allow sufficient time for the slab to dry out before installation of resilient flooring is started.

1.07 ATTIC STOCK

A. Extra Materials

1. Furnish additional floor covering materials for replacement to the Commissioner, including manufacturer maintenance information.
2. Furnish materials of each size, color pattern, and type of material included in the Work. All materials must be new, clean, undamaged and in original containers.
3. Furnish materials at the rate of one (1) carton for each 1000-1500 sq. ft of material installed.

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PHASE II BUILDING RENOVATIONS

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Vinyl Composition Tile

1. Amtico Flooring Division, Domco, Florence AL
2. Armstrong World Industries, Inc.: "Imperial Texture/Excelon Supreme".
3. Azrock Floor Products Div., Domco, Florence AL: "Cortina/Premier".
4. Tarkett, Inc.: "Expressions/Signal"
5. Mannington Mills, Inc.: "Essentials" "and Designer Essentials"

B. Vinyl Wall Base and Accessories

1. Armstrong World Industries, Inc.
2. Mercer Plastic Co., Inc.
3. Tarkett, Inc.

Or approved equal.

C. Vinyl Composition Feature Strips

1. Armstrong World Industries, Inc.
2. Azrock Products Div., Domco
3. Amtico Flooring Division, Domco

Or approved equal.

D. Moisture Test Kits:

1. Vinyl Plastics, Inc. Sheboygan, WI 53082
2. Sealflex Industries Costa Mesa, CA
3. Floor Seal Technology, Inc. San Jose, CA 95112

Or approved equal.

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2.02 MATERIALS

A. Vinyl Composition Tile (VCT)

Provide VCT product, of domestic manufacture, in compliance with Fed. Spec SS-T-312, Type IV, Composition I, and ASTM F1066, Comp. 1 Class 2 through pattern, asbestos free, complying with the following requirements:

1. Size: 12" x 12" x 1/8" gage
2. Color: As indicated on the drawings
3. Light Reflectivity: Maximum range as per Manufacturers Light Reflectivity Tables

D. National Fire Protection Association (NFPA)

Standard 253 Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.

E. Detectable Warning Surfaces (Interior locations)

1. Detectable Warning Surfaces shall be in compliance with the current requirements of the Americans with Disabilities Act, Section 4.29.
2. Material: Composite (polyester) or rubber.
3. Size: 12" x 12" x 1/4" thick tactile tiles.
4. Manufacturer's standard colors as selected by Project Architect.

2.03 ACCESSORIES

A. Vinyl Base

1. Fed. Spec. SS-W-40, Type II of standard solid colors as selected, as follows:
2. 4" high, 1/8" thick (tolerance \pm .005"), compression type.
3. Top corner rounded, bottom coved, arranged for above floor application. Provide straight base for carpeting.

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4. Provide mitered or coped inside corners and preformed external corners.
 5. Colors as selected by Architect/Matte finish.
- B. Resilient Edge Strips, Transition Strips, Reducer Strips, etc.
- 1/8" thick, homogeneous vinyl, tapered or bullnose edge, color to match flooring, or as selected by Architect from standard colors available; not less than 1" wide.
- C. Resilient Feature Strips
- 1/8" thick, vinyl composition, 1" x 24" standard colors
- D. Adhesives
1. Type as recommended by manufacturer for particular resilient flooring and base.
 2. Adhesive suitable for adhesion to plaster, concrete, masonry, metal or wood, waterproof after drying to resist action of water.
- E. Edging Strip
1. Brass or White alloy metal.
 2. Under flange type, with anchors suitable for type of subfloor indicated.
- F. Vinyl Saddles
1. Flush or tapered as indicated.
 2. Thickness to suit abutting floor covering material.
 3. Colors as selected by Project Architect.
- G. Concrete Slab Primer
- Resilient flooring adhesive manufacturer's recommended primer for preparation of porous or dusty concrete, non-staining type.
- H. Leveling and Patching Compound

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Hydraulic-cement-based, polymer-modified, self-leveling product that can be applied in minimum uniform thicknesses of 1/8 inch (3 mm) and that can be feathered at edges to match adjacent floor elevations.

1. Compressive strength: Not less than 4100 psi at 28 days when tested according to ASTM C 109/C 109M.
2. Underlayment: Ardex K-15 or Dayton Superior Levelayer I.
3. Leveling and patching compounds containing gypsum are not permitted.

I. Floor Polish

Fed. Spec. P-F-430, heavy traffic water emulsion floor wax, as recommended by flooring manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

A. General

1. Installer shall inspect subfloor surfaces to determine that they are satisfactory. A satisfactory subfloor surface is one that is clean, dry, flat, smooth, level and free from cracks, holes, ridges, or coatings preventing adhesion, and other defects impairing performance or appearance. Notify the Commissioner of conditions, which will adversely affect flooring installation. Do not proceed with installation until conditions have been corrected.
2. Installation of the resilient flooring (or any component thereof) shall indicate the Contractor's acceptance of the subfloor as a satisfactory substrate to its work.
3. Do not allow resilient flooring work to proceed until subfloor surfaces are satisfactory.

B. Concrete Subfloor

1. Perform bond and moisture tests on concrete subfloors to determine if surfaces are sufficiently cured and dry as well as to ascertain

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presence of curing, sealing, hardening or any other compounds.

- a. Bond Tests shall be in accordance with resilient flooring Manufacturer's Installation Manual.
- b. Moisture vapor transmission shall not exceed 5 pounds per 1,000 square feet in 24 hours. Tests shall be in accordance with ASTM F1869.
- c. Installer shall provide certification that the concrete substrate surfaces have been examined and are acceptable in accordance with Article 1.04B.

3.02 SURFACE PREPARATION

- A. Unless otherwise specified, follow the materials manufacturers' written instructions.
- B. Remove dirt, grease, oil, paint, varnish, wax, sealers, curing or hardening compounds and contaminants which may impair the full bonding of the materials to the substrate. Avoid organic solvents. Remove residual adhesives as recommended by the flooring manufacturer.

C. Concrete Subfloor

Prepare concrete slabs in accordance with ASTM F710.

1. Remove trowel marks or other projections by grinding or sanding.
2. Level uneven surfaces with smooth troweling of mastic underlayment. Follow underlayment manufacturer's application and curing instructions.
3. Provide a substrate surface with not more than 1/8 inch in 10'-0" variation from level or plane of required slope.
4. Treat porous and dusty concrete with primer after vacuum cleaning the surface. Apply primer at the rate recommended by the primer manufacturer.

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5. Broom or vacuum clean subfloor prior to installation of flooring.

3.03 INSTALLATION - GENERAL

- A. Install resilient flooring materials in compliance with manufacturer's latest printed instructions.
- B. Scribe cut and fit resilient flooring to permanent fixtures, pipe trench covers, built-in cabinets, pipes, outlets columns, walls and partitions.
- C. Tightly cement resilient flooring to sub base without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks or other surface imperfections.
- D. Hand roll flooring at perimeter of each covered area to assure adhesion.
- E. Spaces and areas where flooring is being installed shall be closed to traffic and other trades until flooring has set.
- F. Protect finished installation at all times. Contractor will be held responsible for all damage to flooring until Final Acceptance.

3.04 INSTALLATION OF TILE FLOORS

- A. Lay tile from center marks established with principal walls, discounting minor offsets, so that tile at opposite edges of room area are of equal width. Adjust as necessary to avoid use of cut widths less than 1/2 tile at room perimeters. Lay tile square to room axis.
- B. Match tiles for color and pattern by using tile from cartons in same sequence as manufactured and packaged if so numbered. Cut tile neatly around all fixtures. Broken, cracked, chipped, or deformed tiles are not acceptable.
 1. Lay tile in patterns indicated and as directed by the Project Architect.
 2. Lay adjacent tile with direction of texture opposite adjoining tiles.

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- C. Adhere tile flooring to substrates using full spread of adhesive to edge of covered area, applied as directed by tile manufacturer.
- D. Cut tiles using equipment and methods recommended by respective tile manufacturer. Provide smooth cut edges tightly fit to adjacent work.

3.05 INSTALLATION OF ACCESSORIES

- A. Apply wall base to walls, columns, pilasters, casework and other permanent fixtures in rooms or areas where base is required. Install base in lengths as long as practicable, with corners fabricated from base materials with mitered or coped inside corners and preformed external corners. Tightly bond base to substrate throughout length of each piece, with continuous contact at horizontal and vertical surfaces.
 - 1. On masonry surfaces, or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material. Color to match base material.
- B. Place resilient edge strips tightly butted to flooring and secure with adhesive. Install edging strips at edges of flooring which would otherwise be exposed. Locate strips under doors.
- C. Where color of flooring changes between spaces, install feature strip between the two colors. Feature strip shall be centered under the door when it is in a closed position.
- D. Apply resilient accessories to areas as indicated and in strict accordance with manufacturer's installation instructions

3.06 DETECTABLE WARNING SURFACES

- A. Install surface units with adhesive in accordance with Manufacturer's recommendations, as indicated on Drawings and in compliance with ADA Section 4.29 requirements.

3.07 CLEANING AND PROTECTION

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- A. Perform the following operations immediately after completing resilient product installation:
1. Remove adhesive and other blemishes from exposed surfaces.
 2. Sweep and vacuum surfaces thoroughly.
 3. Damp-mop surfaces to remove marks and soil.
 - a. Do not wash surfaces until after time period recommended by manufacturer.
- B. Protect resilient products from marks, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.
1. Apply protective floor polish to horizontal surfaces of vinyl composition tile that are free from soil, visible adhesive, and surface blemishes if recommended in writing by manufacturer.
 - a. Use commercially available polish acceptable to manufacturer for vinyl composition tile.

END OF SECTION

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SECTION 099000
PAINTING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. This Section includes surface preparation and field painting of the following:

1. Exposed interior items and surfaces.
2. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural.
3. When removing or disturbing existing paint on surfaces that have not been tested by City of New York for lead content, assume that the existing paint contains lead. Take necessary precautions to protect workers. Provide measures to separate paint removal work areas from occupied areas, and clean-up and disposal.

B. When removing or disturbing existing paint on surfaces that have not been tested for lead content, assume that the existing paint contains lead. Take necessary precautions to protect workers. Provide measures to separate paint removal work areas from occupied areas, and clean-up and disposal. The latest version of the documents listed below shall govern the work:

A. Occupational Safety and Health Administration (OSHA)

1. General Industry Standards, 29 CFR 1910.
2. Lead Standard for General Industry, 29 CFR 1910.1025.
3. Respiratory Protection, 29 CFR 1910.134.
4. Hazard Communication, 29 CFR 1910.1200.
5. Specifications for Accident Prevention Sign and Tags), 29 CFR 1910.245.
6. Construction Industry Standards, 29 CFR 1926.
7. Construction Industry Lead Standard,

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29 CFR 1926.62.

B. Environmental Protection Agency (USEPA)

1. United States Environmental Protection Agency Regulations, 40 CFR Part 261.

C. The New York State Department of Health (DOH).

1.02 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1. Federal Specifications (FS)
2. American Society of Testing and Materials (ASTM)
3. N.Y.S. Department of Environmental Conservation
4. U.S. Department of Labor
5. Occupational Safety and Health Administration (OSHA)

1.03 SUBMITTALS

A. Product Data

Provide manufacturers' product literature for all materials specified and material manufacturer's printed directions and recommendations for environmental conditions, surface preparation, priming, mixing, reduction, spreading rate, application, storage and VOC content, as applicable for each of the materials specified.

B. Quality Assurance

1. Certification that materials for each system are obtained from a single manufacturer.

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2. Certification that materials comply with N.Y.C. and N.Y.S. regulations for Volatile Organic Compounds.

1.04 QUALITY ASSURANCE

A. General

1. All painting materials shall arrive at the job ready-mixed.
2. Varnish containers shall not exceed 5 gallon capacity.
3. Remove all rejected materials from the premises immediately.

B. Qualifications

1. Work of this Section shall be performed by personnel with experience in performing this type of Work.
2. The Contractor shall ensure that all employees meet the qualifications set forth in OSHA, 29 CFR 1926.62 (Lead In Construction Standard).

C. Source Limitations: Obtain block fillers, primers, and undercoat materials for each coating system from the same manufacturer as the finish coats.

D. Regulatory Requirements

1. N.Y.C. Building Code, latest edition
2. N.Y.S. Department of Environmental Conservation -Part 205 on "Architectural Surface Coatings" - for (VOC) Volatile Organic Compounds.
3. U.S. Department of Labor, Occupational Safety and Health Administration, Construction Industry Standards (29 CFR 1926/1910) Revised 10/1/79, Washington, D.C.
4. Occupational Safety and Health Administration (OSHA) 29 CFR 1926.62 (Lead In Construction Standard).

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5. New York State Department of Environmental Conservation regulations, 6 NYCRR part 364..
6. New York City Department of Environmental Protection Waste water disposal permitting requirements.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Delivery

Deliver materials to the site in original, unopened containers bearing manufacturers name and label containing the following information:

1. Product name or title of material
2. Manufacturer's stock number, batch number, VOC content in grams per liter and date of manufacture.
3. Manufacturer's name
4. Federal Specification number, if applicable.
5. Federal regulations for amount of lead in paint (less the 0.06% lead in non-volatile ingredients)
6. Contents by volume for major pigment and vehicle constitutions
7. Color name and number

B. Storage

1. Commissioner will designate space on premises for storage of materials. Contractor shall restrict storage in this area to paint materials and related equipment, and provide the following:
 - a. Provide one (1) approved chemical dry fire extinguisher equal to 20 lb. CO₂ rating in all assigned rooms or locations where painting materials are stored. Fire extinguisher shall bear the label of the National Board of Fire Underwriters and tag of most recent inspection.
 - b. Provide three (3) standard size red fire pails with clean sand in above locations. At the

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completion of project, fire extinguishers and pails shall become property of Contractor.

2. Maintain storage area in clean condition, store materials not in use in tightly covered containers. Remove oily rags, waste and empty containers from site each night.

1.06 GUARANTEES

- A. Adherence of workmanship and materials to Specifications requirements shall be maintained for the one year Contract guarantee period. These requirements shall include the following:
 1. There shall be no evidence of blistering, peeling, crazing, alligating, streaking, staining, or chalking.
 2. Dirt shall be removed without blemishing the finish by washing with mild soap and water.
 3. Colors of surfaces shall remain free from serious fading; the variation, if any, shall be uniform.
- B. Correct all defects, appearing within the guarantee period, by removal of the defective work and replacement as directed.
- C. All corrective measures shall be the Contractor's responsibility, and shall be made at no extra cost to City of New York.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Subject to compliance with specified requirements, provide "First Line" or "Top Quality" products of one of the following manufacturers:
 1. Benjamin Moore and Co.
 2. Devco and Reynolds Co.
 3. Glidden Coatings and Resins.
 4. Or approved equal.

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2.02 MATERIALS

- A. Provide products which meet all N.Y.S. Part 205-VOC requirements for applications outlined herein and comply with low V.O.C. requirements.
- B. Provide products which meet all Federal regulations for amount of lead in paint (less than 0.06% lead in non-volatile ingredients).
- C. Provide best quality grade of various types of coatings as regularly manufactured by the paint materials manufacturers. Materials not displaying manufacturers' identification as a standard, best-grade product will not be acceptable.

2.03 COLORS

- A. Selection
 - 1. Paint colors, surface treatments and finishes will be selected by the Commissioner.
 - 2. Color Schedule will be issued to the Contractor after award of the Contract.

2.04 PAINTING SCHEDULE

- A. Interior Finish Schedule - Standard
 - 1. All new and previously unpainted, surfaces shall receive one (1) prime coat and two (2) finish coats unless otherwise specified.
 - 2. All previously painted surfaces shall be spot primed as needed and receive (2) finish coats unless otherwise specified.
 - 3. Finish coats in areas indicated shall have the sheen and gloss levels specified below

Location

Type

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- a. All interior plaster, gypsum board,
concrete, brick or block surfaces of
walls (Semi Gloss)

2.05 INTERIOR PAINT SYSTEMS

A. Concrete

1. Semi-Gloss Finish:

1st Coat - Vinyl Acrylic Latex Primer
- Sealer (Flat) -- 1.0 Mils DFT

2nd & 3rd Coats-
Semi-Gloss Vinyl Acrylic Latex
Enamel -- 1.3 Mils DFT
each coat

B. Interior Concrete Flooring

1. Gloss Finish:

1st Coat - Polyamide Epoxy Enamel -- 2.5 Mils DFT

2nd Coat - Polyamide Epoxy Enamel -- 2.5 Mils DFT

C. Concrete Masonry Units

1. Semi-Gloss Finish:

*1st Coat - Vinyl Acrylic Latex Block Filler, or 100%
acrylic resin block filler/surfacer as recommended by
manufacturer of succeeding coats.

**1st Coat - Vinyl Acrylic Latex Primer-
Sealer (Flat) -- 1.0 Mils
DFT

2nd & 3rd Coats -
Semi-Gloss Vinyl Acrylic Latex Enamel-- 1.3 Mils DFT
each coat

*Apply filler coat on new and previously unpainted
concrete masonry units at a rate to ensure complete
coverage with all pores filled. If required, provide in
two (2) or more coats.

** Spot prime previously painted concrete masonry unit
surfaces as needed.

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D. Gypsum Drywall and Plaster:

1. Semi-Gloss Finish:

1st Coat - Vinyl Acrylic Latex
Primer Sealer -- 1.0 Mils DFT

2nd & 3rd Coats -
Semi-Gloss Vinyl Acrylic Latex
Enamel -- 1.3 Mils DFT
each coat

2. Gloss Finish:

1st Coat - Vinyl Acrylic Latex
Primer Sealer -- 1.0 Mils DFT

2nd & 3rd Coats -
Gloss Acrylic Latex Enamel -- 1.2 Mils DFT
each coat

3. For use over existing oil based paints

100% Acrylic Primer - - 1.0 mils DFT
Tinted as required to approximate
Finish color

2nd & 3rd Coats -
Semi-Gloss Vinyl Acrylic Latex
Enamel -- 1.3 Mils DFT
each coat

E. Ferrous Metal:

1. Semi-Gloss Finish: Steel Doors and Frames

1st Coat - Alkyd Modified Acrylic Rust Preventive
Latex Primer -- 1.6 Mils DFT

2nd & 3rd Coats -
Semi-Gloss Vinyl Acrylic Latex
Enamel -- 1.3 Mils DFT
each coat

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PART 3 - EXECUTION

3.01 EXAMINATION

A. Verification of Conditions

1. The application of painter's finish to any surface shall be taken to indicate that the Contractor considers such surfaces suitable for a first-class finish.
2. Do not apply painter's finish in any locations until the Work of other Contractors that might damage the new finish is completed.

3.02 PREPARATION AND APPLICATION - EXISTING BUILDING

A. Protection

1. In cases where the painting of surfaces involves removal or disturbance of existing paint and the paint is known or assumed to be lead-based paint, the following protection requirements shall apply:
 - a. All objects near or adjacent to the surface(s) to be painted shall be moved a minimum of three feet away from that surface(s). Any immovable object, and the floor, within the three foot "work area" shall be covered with one layer of 6-mil polyethylene, sealed on all edges to prevent the penetration of dust and debris. If the ceiling is to be painted, all objects in the room and the floor of the room shall be covered in this manner.
 - b. All objects bordering the three-foot work area shall be completely covered with clean cloths, heavy building paper or clean plastic covering.
 - c. The protection shall remain in place during all paint removal activities.
 - d. All protection is to be carefully removed, cleaned or discarded after painting is complete.

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B. Removal of Existing Work

1. Remove wire guards, screens, grilles and similar items as necessary to paint properly all surfaces behind these items.
 - a. These items shall be HEPA vacuumed and wet-cleaned once removed. Once cleaned, the items shall be placed on 6-mil polyethylene sheeting (or equivalent) and covered with a second layer of 6-mil polyethylene sheeting.

C. Surface Preparation

1. Gently wet mist the surface to be scraped with water, then remove all loose paint with scraper and putty knife.
2. Sand existing surfaces to dull sheen and gloss. Before sanding, wet mist the area to be sanded. (Power sanding without a HEPA-filtered vacuum recovery system is not allowed).
3. Remove dust by washing with water, using damp sponge or cloth.
4. After washing, spot prime grease and water stains; magic markers marks, crayon marks, lipstick marks, etc; with a quick-drying alcohol base primer sealer to prevent bleeding.
5. Fill all cracks and holes with appropriate filler material, wet mist and sand flush with adjacent surfaces and spot prime. (Power sanding without a HEPA-filtered vacuum recovery system is not allowed).
6. Existing paint that was not removed with scraper and which appears to be sound shall receive spackling compound around perimeter high spots and feathered out so that surface is smooth. Repair gouges created by the scraping process and other imperfections in the existing surface with spackling compound to provide a smooth, even finished surface.
7. Apply number of finish coats specified herein or as many as may be necessary to obtain the proper finish and completely cover the substrate.

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8. Cement Plaster: Coat surfaces to be patched with an approved bonding agent. Patch with an approved mortar patching mix and finish to match texture of adjacent surfaces.

3.03 APPLICATION

A. General

1. No Work shall be performed in spaces that are not broom clean and free of dust and waste.
2. Apply paint materials to produce smooth finished surfaces, free of brush or roller marks, drops, runs, or sags.
3. Paint materials shall be kept at a proper and uniform consistency.
4. Apply all coats with brush or roller, varying slightly the color of succeeding coats.
5. Brush out or roll on first or prime coat; work well into surface.
6. Each coat shall be inspected, approved and dry before proceeding with additional coats.
7. Finish doors on tops, bottoms and side edges same as exterior faces.

3.04 CLEANING

A. General

Contractor shall clean-up behind each paint crew such that painting and clean-up will be a continuous uninterrupted operation. The practice of one general clean-up after completion of all painting will be strictly prohibited. This clean-up will include, but not be limited to the following:

1. Remove spots or defacement resulting from Work of this Section.

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2. Retouch all damaged surfaces to leave Work in perfect finished condition.
3. If spots or defacement cannot be satisfactorily removed and retouched, re-finish the surfaces as directed.
4. Within the three foot work area created for removal and painting where existing paint is known or assumed to be lead-based all objects and surfaces shall be thoroughly HEPA vacuumed, wet-cleaned and HEPA vacuumed again. In rooms where the ceiling has been painted all surfaces and objects in the room shall be cleaned in this manner.
5. The contractor shall ensure that the objects and surfaces under protective covering are free of any dust or debris created during painting activities. If necessary, these objects and surfaces shall be wet cleaned and HEPA vacuumed.
6. The contractor shall conduct any cleaning deemed necessary by the Commissioner.
7. Free all operating units of painted materials and leave them clean and in proper working order.
8. Remove from premises all surplus paint materials, debris and any other rubbish resulting from the Work.
9. Leave storage space clean and in condition required for equivalent spaces in project.

3.05 PROTECTION

- A. Provide caution tape and/or locked entryways during paint removal activities in existing buildings to prevent access to the work area from unauthorized personnel.
- B. Provide "Wet Paint" signs to protect newly-painted finishes. Remove temporary protective wrappings provided by others for protection of their Work after completion of painting operations:
- C. At the completion of Work of other trades, touch-up and restore all damaged or defaced painted surfaces as directed by Commissioner.

END OF SECTION

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SECTION 102113

METAL TOILET COMPARTMENTS

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Toilet and Bath Accessories: Section 102813.

1.02 SUBMITTALS

- A. Shop Drawings: Show fabrication details and connections to adjacent work.
- B. Product Data: Catalog sheets, specifications, and installation instructions for the following:
1. Panels and Doors.
 2. Pilasters, types specified.
 3. Hardware and accessories.
- C. Samples:
1. Hardware: One, each item and type specified.
 2. Panels: One 12 inch square corner section.
 3. Pilaster Leveling Device: One complete device, including pilaster shoe.
 4. Overhead Bracing: One 12 inch long section.
 5. Bracket Fittings: One each type.
 6. Fasteners: One each type.
 7. Color Samples: Manufacturer's standard colors for specified finish.

1.03 PROJECT CONDITIONS

- A. Do not install the Work of this Section until after the floors, walls, and ceilings of the spaces to receive the Work are completed.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Sheet Steel: ASTM A 591, galvanized-bonderized, of the following minimum thicknesses.
1. Pilasters (Overhead Braced): 20 gage.
 2. Pilasters (Unbraced): 16 gage.
 3. Panels (Partitions): 20 gage.

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4. Doors: 22 gage.
 5. Concealed Reinforcing for Anchorages: 12 gage.
 6. Concealed Reinforcing for Tapping: 14 gage.
- B. Core Material: Corrugated paperboard formed of panels weighing approximately 34 pounds per 1000 square feet or kraft paper weighing not less than 25 pounds per 1000 square feet formed into a hexagonal honeycomb pattern containing cells of approximately one inch size.
- C. Pilaster Shoes; One for each Pilaster: AISI Type 302/304, 20 gage stainless steel, 3 inches high, finish to match hardware.
- D. Stirrup Brackets: Non-ferrous alloy with satin chrome finish.
- E. Hardware and Accessories: Heavy duty operating hardware and accessories, non-ferrous cast alloy with satin chrome finish, unless otherwise specified.
- F. Fasteners: Minimum 1/4 inch diameter machine bolts with tamper resistant heads; finished to match hardware.

2.02 FABRICATION

- A. Panels: Pressure laminate face sheets to core, form edges by lapping or seal edges with continuous locking strip. Miter and weld corners, with welds ground smooth, or cap with stainless steel clips.
1. Panel Thickness: One inch.
 2. Provide cut-outs, with concealed reinforcing, as required for hardware. Edge cut-outs and finish exposed edges to match remaining uncut edges.
 3. Provide concealed steel or wood reinforcing for installation of hardware, fittings, brackets, and required accessories. Spot weld steel reinforcing in place. Permanently adhere wood reinforcing in place.
 4. Fabricate panels for thru bolt fastening at fittings, brackets, stops and keepers, channels, and other locations indicated on the Drawings.
 5. Where grab bars are indicated reinforce panels for attachment of grab bars.
 6. Provide cut-outs, with concealed reinforcing, as required for convactor covers, pipes, and other obstructions which interfere with pilasters or

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panels. Edge cut-outs and finish exposed edges to match remaining uncut edges.

- B. Doors: One inch thick units, size as indicated, of same construction and finish as panels.
- C. Ceiling-Hung Pilasters: 1-1/4 inch thick units, of same construction and finish as panels, with galvanized steel anchorage devices for securing to overhead support.
- D. Floor-Supported Pilasters: 1-1/4 inches thick units, of same construction and finish as panels, with galvanized steel anchorage complete with threaded rods, lock washers, and leveling nuts.
- E. Overhead-Braced Pilasters: 1-1/4 inches thick units, of same construction and finish as panels, with galvanized steel floor supports and leveling bolts.
 - 1. Overhead Brace: Continuous extruded aluminum tube, anti-grip design with clear anodized finish. Set and secure brace into top of each pilaster.
- F. Hardware and Accessories; One set for each Door:
 - 1. Hinges: Heavy duty gravity type, recessed top and bottom door assemblies and clamp flange jamb brackets thru bolted to pilaster. Stainless steel door pivot pin operating in upper hinge bronze or nylon bushing, opposing cam action unit in lower portion. Hinges adjustable to permit door to remain stationary at any desired angle.
 - 2. Mortise Lock: Stainless steel, thumb turn control inside, tool operated slotted rosette outside for emergency access.
 - 3. Combination Stop and Keeper: Clamp flange type, with securely attached rubber bumper.
 - 4. Combination Coat Hook and Bumper: Manufacturer's standard unit, rubber tipped.
 - 5. Door Pull (for doors opening out): Chrome plated or stainless steel.
 - 6. Wall Bumper (for doors opening out and striking adjacent wall at 90 degrees): Ives No.406 or Glynn-Johnson No. 50W rubber dome with concealed fastener.
- G. Factory Finish: One coat of rust resisting primer and two finish coats of baking enamel applied to steel surfaces.
 - 1. Color: As selected from the manufacturer's standard colors.

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PART 3 EXECUTION

3.01 INSTALLATION

- A. Install Work of this Section in accordance with the manufacturer's printed instructions, except as otherwise indicated or specified.
 - 1. Use thru bolt fasteners at brackets, stops and keepers, channels, and other locations indicated on the Drawings.
 - 3. Position door bumpers at proper locations to prevent door from striking adjacent wall or panel.
 - 4. Fasten pilaster shoes to pilasters with one fastener on each side.
- B. Set units with no more than 1/2 inch between pilasters and panels, and no more than one inch clearance between panels and walls.
- C. Tolerances: Maximum variations from plumb in the lines and surfaces of the Work of this Section shall be 1/8 inch in any 5 feet.

3.02 ADJUSTING

- A. Adjust leveling devices, door hardware, and other operating parts for smooth operation.
 - 1. Set hinges of in-swing doors to hold doors open approximately 35 degrees from the closed position when unlatched.
 - 2. Set hinges of out-swing doors to return to the fully closed position.
 - 3. Lubricate hardware for proper operation.

3.03 CLEANING

- A. Clean exposed surfaces and touch up minor finish imperfections using materials and methods recommended by the manufacturer.

END OF SECTION

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SECTION 102813
TOILET AND BATH ACCESSORIES

PART 1 GENERAL

1.01 SUBMITTALS

- A. Product Data: Specifications or data sheets and installation instructions for each product required.
- B. Contract Closeout Submittals: Furnish the following, as applicable, for each product required:
 - 1. Operation and maintenance data.
 - 2. Parts list.
 - 3. Keys and tools.

1.02 QUALITY ASSURANCE

- A. Provide products from more than one manufacturer if necessary to meet the requirements of this Section.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products in manufacturer's original protective packaging.
 - 1. Furnish items with protective wrappings or covers as required to protect finishes. Do not remove protective coverings until completion of other Work liable to damage accessory finish.
- B. Pack products with required trim, mounting devices, fasteners, service tools or keys, and complete installation instructions.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Sheet Steel: Cold rolled, commercial quality, ASTM A 366.
 - 1. Galvanized: Zinc coated, ASTM A 123.

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- B. Mounting Devices and Fasteners: Stainless steel, unless otherwise indicated.

2.02 FABRICATION

- A. Equip units with keyed vandal-resistant lock where key access is specified.
- B. Mounting Devices: If not indicated, furnish type and size compatible with accessory unit specified which will securely mount accessory to wall or partition construction indicated.
 - 1. Grab Bars: Furnish anchoring devices which will withstand minimum downward pull of 500 pounds.
- C. Exposed Mounting Devices and Fasteners:
 - 1. Type: Theft-resistant.
 - 2. Finish: Match accessory finish, unless otherwise indicated.
 - 3. Masonry Construction: Furnish stainless steel machine screws in nonferrous expansion anchors except furnish stainless steel toggle bolts where anchorage occurs in masonry cavities.

2.03 KEYS AND TOOLS

- A. Keys: Furnish minimum of 2 keys and an additional 2 keys for every 6 key operated accessories.
 - 1. Key similar key access units alike unless otherwise specified.
- B. Tools: Furnish socket wrenches compatible with set screws of concealed theft-resistant fastenings. Furnish minimum of 2 wrenches and an additional 2 wrenches for every 6 accessories having such fastenings.

2.04 MIRRORS

- A. Types:
 - 1. Type A-S: Polished tempered glass mirror in stainless steel frame with integral shelf.
- B. Size: Unless otherwise indicated, furnish mirror units with overall frame size 18 x 24 inches.

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- C. Mirror Frame and Hanger Assembly: Furnish the following for mirror Type A-S.
1. Frame: One of the following options:
 - a. Angle Framed Construction: Stainless steel angle frame with No. 4 finish, minimum 5/8 x 5/8 inch x 18 gage, corners mitred, heliarc welded, ground smooth and polished, with concealed 18 gage stainless steel angles welded on inner side of frame 6 inches oc and tapped to receive back plate fasteners. Mirror shall be centered in the frame and held in place with shock absorbing cushion at each edge. Bottom of frame shall have 2 holes for access to locking devices.
 2. Back Plate: One of the following options:
 - a. Galvanized steel, 20 gage, full interior area of frame, secured to frame with stainless steel tabs on frame folded into place.
 3. Mounting Frame (Hanger Bracket): One of the following options, with 3/16 inch cadmium plated steel wall fasteners of type and length to suit wall construction:
 - a. Box or rectangular type, welded construction, fabricated of 18 gage galvanized steel, with four 18 gage locking tabs located to align with slots and locking devices on back plate. Mounting frame shall have 4 holes, one near each locking tab, for fastening frame to wall.
- D. Type A-S Mirrors: No. 1 or mirror quality polished float/plate tempered glass, 1/4 inch thick. Two coats of silver shall be factory-applied on the glass, followed by one coat of electrically deposited copper on the silver. Finish mirror back and apply a thick protective coat of heavy waterproof paint.
1. Identification Stamp: Identify tempered glass units by affixing manufacturer's stamp labeled "tempered" to glass face.
 2. Mirror Backing: Shock absorbing material over entire back mirror surface.

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2.05 SHELVES

- A. Stainless Steel Shelf: 18 gage stainless steel one-piece top with minimum 1/2 inch return flange on all 4 sides and front hemmed; exposed 16 gage stainless steel angular gusset brackets with two 3/16 inch diameter mounting holes per bracket; all welded construction. Locate brackets 3 inches from each end of shelf. Furnish shelves 5 inches wide by 18 inches long unless otherwise indicated.

2.06 PAPER TOWEL DISPENSERS - SURFACE MOUNTED (PTD-SM)

- A. Units fabricated of 22 gage stainless steel and designed to dispense multifold or C-fold towels. Approximate cabinet size: 10 inches wide x 15 inches high x 4 inches deep. Hinge front at bottom with a full length, continuous stainless steel hinge. Units shall have key access at top of front and integral refill indicator in front face or side. Fabricate units with flush, tight seams and joints, rounded corners, sloping tops and all exposed edges rolled.

2.07 SINGLE ROLL TOILET TISSUE DISPENSERS (SRTTD)

- A. Fabricate units to accommodate standard 4-1/2 inch wide core tissue roll up to 5 inch diameter. Units shall have heavy duty internal spring in metal roller to securely hold tissue roll within holder.
1. Surface-mounted Units: Post type with concealed mounting, constructed of stainless steel with polished satin finish on exposed surfaces. Support posts shall be 22 gage, one-piece construction with locking set screw on bottom of each post. Finish metal roller to match posts. Provide heavy duty stainless steel concealed mounting brackets.

2.08 WASTE RECEPTACLES - RECESSED (WR-R)

- A. Units fabricated of 22 gage stainless steel with cabinet access door, and removable and reusable metal or rigid molded plastic waste container equipped with lifting handle. Fabricate door of 22 gage stainless steel double-pan, or 18 gage stainless steel single-pan, construction. Mount door on full length, continuous stainless steel

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hinge. Approximate overall size: 48 inches high x 14 inches wide x 7 inches deep. Minimum capacity of waste container: 1.3 cu ft. Units shall have integral trim flange and key access.

2.09 FEMININE NAPKIN DISPOSALS - SURFACE MOUNTED (FND-SM)

- A. Units fabricated of 22 gage stainless steel with 22 gage stainless steel sloping cover mounted on a full length, continuous stainless steel hinge. Equip cover with a side mounted handle for lifting. Approximate overall size: 11 inches high x 8 inches wide x 4 inches deep. Design disposal to be emptied by a door at bottom, mounted on a full length, continuous stainless steel hinge and equipped with a hidden snap latch. Fabricate back for 3 or 4 point fastening to wall.

2.10 LATHER SOAP DISPENSERS - SURFACE MOUNTED (LSD-SM)

- A. Individual surface mounted type consisting of a removable clear glass or clear polyethylene soap container enclosed in a satin finish chromium plated brass or steel case with push-in lather dispenser valve, locked filler cap at top, and separate concealed wall plate for theft-resistant mounting. Soap container capacity: Not less than 12 oz. Valve shall be located above soap level and shall have a self cleaning piston. Fabricate valve and all moving parts of stainless steel. Units shall have viewing slots on both sides of dispenser, filler cap permanently chained to dispenser body, and service key access for refilling.

2.11 TOWEL HOOKS (TH)

- A. Towel pin extending approximately 3-1/2 inches from wall and flange approximately 2 x 2 inches, fabricated of chromium plated heavy forged brass or heavy gage stainless steel. Units shall have heavy duty concealed back plate and theft-resistant fastening.

2.12 GRAB BARS (GB)

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- A. Grab bar assemblies consisting of stainless steel tubing with integrally welded mounting flanges secured to concealed tenon plates with theft-resistant fasteners, and complying with the following requirements:
1. Tubing: Stainless steel, 1-1/2 inch od x 18 gage wall thickness. Bend tubing at each end and join to flanges by concealed welding. Total projection from wall line (including bar diameter): 3 inches.
 2. Flanges: Stainless steel, 3 inch diameter, 11 gage wall thickness, not less than 1/2 inch deep.
 3. Finish: Brush satin finish, unless otherwise indicated.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Unless otherwise indicated, install Work of this Section in strict accordance with the manufacturer's instructions.
1. Install all attachments, anchorage devices, and fasteners as required to securely mount accessory units to types of wall or partition construction indicated.

3.02 CLEANING AND POLISHING

- A. Remove protective wrappings from installed accessories after completion of other Work liable to damage accessory finish. Remove residue, if any, and polish exposed surfaces.

END OF SECTION

SECTION 13 48 13
ACOUSTICAL PANEL SYSTEMS

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

- A. This section includes the fabrication of acoustical panels that when erected in accordance with the manufacturer's shop drawings to create the Acoustical Barrier System as shown on the drawings.

1.02 REFERENCES

- A. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- B. ASTM A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
- C. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
- D. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
- E. UL - Fire Resistance Directory and Building Material Directory.

1.03 SUBMITTALS

- A. Product Data: Manufacturer's complete and current product data for each product required, including complete installation requirements.
- B. Quality Control Submittals:
 - 1. Certification: Manufacturer's written statement, certifying that the suspension system meets or exceeds the specified structural requirements.

1.04 DESIGN REQUIREMENTS

- A. Structural: The entire enclosure shall be designed by the manufacture to be self supporting. Where wall

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loadings require additional structural strength, it shall be provided by heavier panel skins, additional internal longitudinal reinforcing members, and/or additional structural members. The assembled structure shall not exhibit any panel joint deflections in excess of $L/200$, where L is the unsupported span length of any panel section within the completed enclosure.

B. Acoustical:

1. The manufacturer shall provide certified testing data obtained from an acoustical laboratory, listing sound absorption and transmission loss characteristics of the enclosure. When requested by the engineer, the manufacturer shall arrange to have a copy of all pertinent acoustical laboratory reports forwarded directly from the laboratory to the engineer.
2. The supplier of the Panels shall provide certified test data from an accredited independent Acoustical Laboratory giving sound absorption characteristics of the panels. When tested in accordance with ASTM C423 sound absorption coefficients shall not be less than:

Frequency, Hz	125	250	500	1000	2000	4000
Coefficient	.20	.50	.70	.90	.70	.60

3. The sound transmission loss values of the panel shall be tested in accordance with ASTM E90 and shall not be less than:

Frequency, Hz	125	250	500	1000	2000	4000
	5	0		0	0	0
Transmission Loss, dB	20	25	35	45	50	50

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical units and framing system components to the Project Site in original, unopened packages and store them in a fully enclosed space protected against damage from moisture, direct sunlight, surface contamination, and other causes.

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- B. Open ends of acoustical unit packages 24 hours before installation to stabilize moisture content and temperature.
- C. Handle acoustical units carefully to avoid chipping edges or damaging units in any way.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable manufactures of the acoustical panels are as follows:
 - 1. **Industrial Acoustical Company**
(Rep. - Albert Weiss Products, Inc.
270 Madison Ave, New York, NY 10016
Phone: 212-679-8550)
 - 2. **VAW Systems**
(Rep. - Kane-Davey Associates, Inc.
2 Schooner Lane, Unit 12, Millford, CT 06460
Phone: 203-255-1354)
 - 3. **Vibro-Acoustics**
(Rep. - Metro Air Products
111 Omni Drive, Hillsborough, NJ 08844
Phone: 908-431-5556)
 - 4. **McGill AirSilence LLC**
2400 Fairwood Ave, Columbus, Ohio 43207
Phone: 614-829-1200

2.02 PANEL CONSTRUCTION

- A. All barrier wall panels shall be 4 inches thick, as noted on the drawings with a solid galvanized steel exterior shell and a perforated interior galvanized steel shell.
- B. The outer and inner shells shall be tack or spot welded to the perimeter and internal longitudinal steel channels and box internal closures, in such a manner and spacing that the panel assembly will not fail at

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the maximum operating loads specified in Design Requirements.

- C. The outer shell shall be constructed of galvanized steel with a minimum 16-gage thickness.
- D. The inner shell shall be constructed of galvanize perforated steel with a minimum 22-gage thickness. Perforations shall be 3/32" round holes, 3/16" on center providing approximately 28% open area.
- E. All perimeter and internal longitudinal steel channel members shall be constructed of ASTM A653 commercial-quality galvanized steel with a minimum 18 gage thickness.
- F. All steel panel surfaces, internal channels, and trim items shall be fabricated from zinc-coated steel with a dipped galvanized coating (minimum G-60 coating with class as determined by ASTM A924) and shall meet all requirements of ASTM A653 for commercial quality galvanized carbon steel.
- G. Panels shall have a tongue and groove joint construction.
- H. Panel shall be completely metal enclosed with interior cavity completely filled with acoustic grade fiberglass as described below:
 - 1. Media shall be incombustible, inert, acoustic quality, shot-free acoustic grade fiberglass with long, resilient fibers bonded with a thermosetting resin. Fiberglass density shall be as required to insure conformance with laboratory test data. Fiberglass shall be packed with a minimum of 5% compression during panel assembly. Media shall be bacteria, mildew, and fungus resistant and vermin proof, resilient such that it will not crumble or break, and conforming to irregular surfaces. Media shall not cause or accelerate corrosion of aluminum or steel. Mineral wool will not be permitted as substitute for fiberglass.
 - 2. No insulating materials shall be used that have a flame spread greater than 25 or a smoke developed greater than 50.
- I. All materials shall be listed and labeled by Underwriters Laboratories Inc for fire hazard classification.

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PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates and structural framing scheduled to receive the barrier wall system for compliance with requirements specified. Do not install the Work until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. Install the panels to create the acoustical wall barrier as indicated on the drawings. Installation shall be in accordance with the manufacturer's shop drawings and recommendations. Verify the dimensions in field prior to fabrication.
- B. All base channels shall be installed on the leveled parapet. Spacing of the base channel attachments shall be as outlined in the manufacture's standard details of assembly.
- C. The perforated side of the acoustical panels shall be facing the Chiller Unit.
- D. All assembly trim items shall be constructed of hot-dipped galvanized steel (minimum 18 gage thickness) and furnished in standard lengths to be field cut to the required dimensions. Spacing of sheet metal screws, application of sealant and position of trim shall be in accordance with the manufacturer's published erection and installation details.
- E. Joint and trim shall be sealed with waterproofing sealant that is neoprene-phenolic mastic formulated to withstand temperatures from -20°F to +300°F. Sealant shall be formulated such that surface preparation of solvent cleaning is not necessary.

3.03 CLEANING AND ADJUSTING

- A. Comply with manufacturer's printed instructions for cleaning and touch-up of minor finish damage.

END OF SECTION

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A. MANUFACTURER:

Company with not less than 3 years of experience in the design, fabrication and assembly of vertical platform lifts.

B. SUBCONTRACTOR QUALIFICATIONS

1. Skilled tradesmen must be employees of the installing contractor approved or trained by the lift manufacturer, with demonstrated ability to perform the work on a timely basis.

C. REQUIREMENTS OF REGULATORY AGENCIES

1. Fabrication and installation work shall be in compliance with applicable jurisdiction authorities.

2. File shop drawings and submissions with NYC DOB. Company pre-inspection and jurisdictional authority inspections and permits are to be made on timely basis as required.

D. SUBMITALS

1. Shop drawings shall show a complete layout of lifting equipment detailing dimensions and clearances as required.

2. The Contractor shall provide physical samples of all items requiring selection of color or finish.

1.05 MAINTANANCE

A. The lift shall be cleaned regularly and inspected at intervals no longer than every 6 months.

1.06 WARRANTY

A. The Contractor shall provide three (3) months guarantee from date of substantial completion. The entire lift and all component parts shall carry a one (1) year warranty. The warranty shall be for the replacement, at no cost, of defective parts and shall include labor required to replace the defective part or parts.

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SECTION 142420
HYDRAULIC VERTICAL PLATFORM LIFT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, General Conditions, and Specification Sections apply to work of this Section.

1.02 DESCRIPTION

- A. Work described in this section includes providing equipment, incidental material and labor required for complete, operable hydraulic platform lift installation. Lifts shall be erected, installed, adjusted, tested and placed in operation by lift system manufacturer, or manufacturer's authorized installer and as follows:

1. Lifts shall be in accordance with the ASME A18.1.
2. Vertical platform lift consisting of an hydraulic tower with a lifting platform and an aluminum enclosure with tempered glass inserts.

Install lift in compliance with NEC-2008, ASME A18.1-2005, ANSI A117.1-2003 and 2010 ADA Standards.

1.03 PREPARATORY WORK

- A. Prior to the lift installation Contractor shall provide the following:
1. Permanent 120 VAC 20 amp single phase power to operate lift to be provided from a lockable fused/cartridge type disconnect switch with auxiliary contacts for battery operation. Refer to drawings for permanent power specifications and location of disconnects. Temporary power may be provided to expedite installation of lift.
 2. Provide a plumb and square hoistway with smooth interior surfaces, including fascias or furring of the hoistway interior.
 3. Provide rough openings per contractor's shop drawings.

1.04 QUALITY ASSURANCE

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PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Savaria hydraulic vertical platform lift, Model V-1504-LUX. (Basis of Design)
- B. Bruno Independent Living Aids, Inc.
- C. Lift-U (Div. of Hogan Mfg., Inc)

2.02 CHARACTERISTICS

- A. Rated Load: 750 lb (340 kg).
- B. Rated Speed: 25 fpm (0.11 m/s).
- C. Car Dimensions:
 - 1. 36 inches W by 54 inches D (914 mm by 1371 mm) - Standard.
- D. Levels Serviced: 2.
- E. Car Configuration:
 - 1. Front/Rear Exit.
- F. Travel: 1-3/4 feet. Maximum of 14' in US.
- G. Pit Depth:
 - 1. 0" - Fixed Ramp Required.
- H. Installation Environment
 - 1. Indoor (interior install).
- I. Powder Coat Finish
 - 1. Almond Beige - Standard.
- J. Operation: Constant pressure.
- K. Power Supply: 120 Volt, 20 Amp, 1 Phase, 60 Hz.
- L. Drive System: 2:1 Roller Chain Hydraulic.
- M. Emergency Power:
 - 1. Battery Operation in Down Direction - Standard.
- N. Controller: Electronic - Free Relay Logic.

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- O. Motor/Pump: 1.5 HP (170 KW), Gear Type.
- P. Manual Lowering: Outside the hoistway at lower landing.
- Q. Car Enclosure: Side Guards of platform shall have a steel cladding and shall be at a minimum of 42" above the upper landing.
- R. Doors and Gates:
 - 1. No Platform Gate required, allowing for ease of operation.
 - 2. First Landing Door:
 - a. Door Type: 64" X 36" wide, with steel frame and tempered glass inserts and shall be equipped with interlock, hydraulic closer and kick plate. The inside kick plate shall be made of still.
 - 3. Upper Landing Gate: 42"H X 36"W, with steel frame and tempered glass inserts and shall be equipped with interlock, spring hinges and kick plate.
 - 4. Lift shall have manufacturer's standard non-skid flooring.
 - 5. Doors and gates shall be flush-mounted to avoid pinch points and shear hazards.
 - 6. Handrail: A single handrail, with a 1-1/2" Diameter and with both ends returned to the side guard shall be located on the control wall of the carriage.
 - 7. Call Stations: Provide flush, surface or door frame mounted landing call/send stations.
 - a. Call Stations will be: Keyed (removable in On/Off position).
- S. Car Operation:
 - 1. Car Operating Panel shall consist of constant pressure buttons, emergency stop/alarm button, on/off key switch (when applicable) and emergency LED light mounted on a removable stainless steel panel (Type 304 #4 Stainless Steel Finish).
- T. Pumping Unit and Control:
 - 1. The pumping unit and control shall be enclosed in the tower. The controller and pump unit shall be pre-wired and tested prior to shipment. The controller is to be relay logic based operation for

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ease of maintenance and service. Pump unit shall incorporate the following features:

- a. Adjustable pressure relief valve.
- b. Manually operable down valve to lower lift in the event of an emergency. This valve shall be activated from outside of the hoistway through a keyed box.
- c. Pressure gauge isolating valve, manually operable.
- d. Gate valve to isolate cylinder from pump unit.
- e. Electrical solenoid for down direction control.

2. Emergency Operation - A manual lowering device shall be located outside the hoistway in a lockable box positioned at a lower landing.

U. Cylinder and Plunger:

1. The cylinder shall be constructed of steel pipe of sufficient thickness and suitable safety margin. The top of the cylinder shall be equipped with a cylinder head with an internal guide ring and self-adjusting packing.
2. The plunger shall be constructed of a steel shaft of proper diameter machined true and smooth. The plunger shall be provided with a stop electrically welded to the bottom to prevent the plunger from leaving the cylinder.

- V. Roller Chains: Two No.50 roller chains with 5/8 inch (16 mm) pitch. Minimum breaking strength 6100 lb (2773 kg) each.

W. Leveling Device:

1. The lift shall be provided with an anti-creep device which will maintain the carriage level within 1/2 inch (12 mm) of each landing.
2. All limit switch and leveling device switches shall be located in a position to be inaccessible to unauthorized persons. They shall be located behind the mast wall and be accessible through removable panels.

- X. Guide Yoke: The 2:1 guide yoke/sprocket assembly shall be supplied with idler sheaves, roller guide shoes,

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bearings and guards.

- Y. Terminal Stopping Devices: Normal terminal stopping devices shall be provided at top and bottom of runway to stop the car positively and automatically.
- Z. Guide Rails and Brackets: Steel 'C' guide rails and brackets shall be used to guide the platform and sling. Guide rails shall form part of the structural integrity of the unit and be integral to the mast enclosure, ensuring stability and minimum platform deflection when loaded.
- AA. Car Sling: Car sling shall be fabricated from steel tubing 44 inches (1116 mm) high with adequate bracing to support the platform and car enclosure. Roller guide shoes shall be mounted on the top and bottom of the car sling to engage the guide rails. Guide shoes shall be roller type with 3 inches (76 mm) diameter wheels.
- AB. Wiring: All wiring and electrical connections shall comply with applicable codes. Insulated wiring shall have flame-retardant and moisture-proof outer covering and shall be run in conduit or electrical wire ways if located outside the unit enclosure. Quick disconnect harnesses shall be used when possible.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. All site dimensions shall be taken to ensure that tolerances and clearances have been maintained and meet local regulations.

3.02 PREPARATION

- A. Pre-inspect the construction and service requirements. for These requirements will be included in drawings, diagrams, engineering data sheets and special instructions before the work begins.

3.03 INSTALLATION

- A. Install all the components of the lift system that are specified in this section to be provided, and that are

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required by jurisdictional authorities to license the lift.

- B. Trained employees of the Contractor shall perform all installation work of this section.
- D. Adjust lift for proper operation and clean unit thoroughly.
- E. Instruct users in operation, trouble-shooting and maintenance procedures.

END OF SECTION

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SECTION 14 24 23
HYDRAULIC PASSENGER ELEVATOR

PART 1 - GENERAL

1.1 DESCRIPTION - GENERAL

A. Related Documents: The general provisions of the contract including Bidding Requirements, General and other Conditions and Specification Requirements apply to all work of this section.

1.2 WORK INCLUDED

The work of this section consist of furnishing all labor, material, equipment and appliances necessary and required by the contractor to install one new hydraulic passenger elevator. Work shall include but not be limited to the following:

A. INSTALL ONE NEW HYDRAULIC PASSENGER ELEVATOR

1. A new microprocessor-based controller.
2. Provide battery powered emergency elevator lowering system.
3. Provide new hydraulic power unit.
4. Provide and install dual jack holeless elevator equipment including jack assemblies and all necessary supporting equipment.
5. Provide a sling and platform (with nickel silver sill).
6. Provide guide assemblies.
7. Provide a cab with doors, door operators, sub flooring, finish flooring, exhaust fan, car station, car lantern, car position indicator etc.
8. Provide guide rails.
9. Provide hoistway entrance frames and associated accessories including rollers, tracks, interlocks, door closers and hangers. Provide hoistway door panels with all accessories at each opening.

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10. Provide car buffer with footing steel.
11. Provide hydraulic pipe line with fittings and supports as necessary.
12. Provide hydraulic oil.
13. Provide rupture valve.
14. Provide scavenger pump system with plastic tubing connecting hydraulic jack oil ring to oil tank in machine room.
15. Provide traveling cable.
16. Provide corridor push-button stations, corridor position indicator, and Fire Fighters' key switch. All pushbuttons shall be installed at appropriate height conforming to ADAAG requirements and all other applicable codes.
17. Provide hands-free autodial telephone incorporated into the main car operating panel. Provide communications between the elevator machine room and the elevator car. Communications must also be provided between the car and a location in the building readily accessible to authorized and emergency personnel as per section 2.27.1.1.1 of A17.1 as modified by Appendix K of the 2008 NYC Building Code.
18. Provide shielded communication wiring to all locations for the communications devices as described above.
19. Provide metal tape with magnetic strip type floor selector and landing device.
20. Provide hoistway switches and elevator pit stop switch.

Provide the following feature for the elevator.
 - a. Independent Service.
 - b. Inspection Service.
 - c. Firefighters' Emergency Operation.
21. Connect smoke detector system to the elevator Fire Fighters' feature.
22. Provide hoistway and machine room wiring, in conduit as per NEC code.

1.3 RELATED ITEMS PROVIDED IN OTHER SECTIONS

1. Construction Facilities and Temporary Controls: protection of floor openings and personnel barriers; temporary power and lighting.
2. Earthwork: excavation for elevator pit.
3. Cast-In-Place Concrete: elevator pit / waterproofing.
4. Unit Masonry: masonry hoistway enclosure, building-in and grouting hoistway door frames, grouting thresholds.
5. Metal Fabrications: support for entrances and rails, hoisting beam at top of hoistway (See Drawing).
6. Provide and install hoistway ventilation at the top of the hoistway to conform to code requirements (3 ft.² required).
7. The machine room shall be provided with ventilation to the outside air.
8. Provide air conditioning to maintain temperature in machine room between 55 degree F and 90 degree F.
9. Provide new pit ladder extending 48" minimum above sill of pit entrance door.
10. Provide a fused disconnect switch or circuit breaker for elevator power per the National Electrical Code with feeder or branch wiring to controller. Size to suit Elevator power requirement. An auxiliary contact shall be provided in the disconnect switch to provide a signal to the battery powered emergency lowering device.
11. Provide a separate 120 volt, A.C. 15 amp, single phase power supply with fused disconnect switch for the elevator cab lighting.
12. Provide electrical power for all elevator related accessories such including sump pump, machine room AC, machine room light, GFI receptacles, pit light, machine room ventilation system, scavenger pump and spare.

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13. Provide an electrical outlet (GFI) and light fixture in pit with switch located adjacent to the access ladder per code.
14. Provide smoke sensing devices, located as required in elevator lobby and machine room with wiring from the sensing devices to elevator controller.
15. Provide dedicated telephone line service up to elevator machine room for elevator emergency cab communication system.
16. Provide zero clearance elevator pit sump pump with power supply, oil separator, and accessories per MEP design.
17. Provide sprinkler in elevator pit.

1.4 REFERENCES

- A. National Electrical Manufacturer Association (NEMA).
- B. American Society for Testing and Materials (ASTM).
- C. American National Standards Institute (ANSI).
- D. Underwriters Laboratories, Inc. (UL).
- E. National Elevator Industry, Inc. (NEII).
- F. American Society of Mechanical Engineers (ASME).
- G. American National Standard Safety Code for Elevator and Escalators. ASME A17.1 and A17.2 latest edition.
- H. New York State Code and Local Codes.
- I. NYC Building Code.
- J. National Electrical code (NEC).

1.5 DEFINITIONS

Company Field Advisor: An employee of the company which lists and markets the primary components of the elevator under their names who is certified by the company to be technically qualified in design, installation and servicing of the

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required products, or an employee of an organization certified by the foregoing company to be technically qualified in design, installation and servicing of the required products.

1.6 MANUFACTURE AND INSTALLATION OF EQUIPMENT

- A. All elevator equipment required under the contract shall be of the highest grade, smooth, and safe in operation, of individuals, firms and corporations, who have been engaged in business or manufacturing of the elevator equipment of similar type, speed, capacity and design as herein specified, for at least a period of 3 years immediately prior to the date of award of the Contract. The successful bidder shall submit a list of projects on which he has performed the installation of elevator equipment of the same kind, type, speed, capacity and operation as that specified herein which have been in satisfactory operation for a period of at least three years.

Furthermore, the organization performing the elevator work shall give satisfactory evidence that it has maintained and operated in City of New York and immediate vicinity, a servicing organization capable of promptly servicing, repairing and replacing equipment and materials of elevator installations of the same type and capacity.

1.7 FIELD MEASUREMENTS

- A. The Contractor shall verify dimensions and conditions at the job during construction so that all work will properly function and meet the required code.
- B. The Contractor, before commencing work shall examine all adjoining work area on which his work is in any way dependent for perfect workmanship according to the intent of the specifications.

1.8 SUBMITTALS

- A. Within 20 days after the award of the contract, the Contractor shall furnish to the Commissioner the names and addresses of the manufacturers, together with catalog information or other identifying description for all items specified in the specification.

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B. The contractor shall submit drawings and other submittals e.g. catalog cuts, charts, graphs, computations, etc. within 30 days of award of the contract. The shop drawings shall show material type and gauge, general dimensions, methods of attachment, location and size of reinforcements and openings, and a general arrangement of components. Matter submitted for approval shall be accompanied by complete information concerning the material, articles and/or design proposed for use in sufficient detail to show compliance with the specification, and use in sufficient detail to show compliance with the specification, and shall be approved before incorporation into the work. Approval thereof will not be construed as relieving the Contractor of compliance with the specification, even if such approval is made in writing, unless the attention of the Commissioner is called to the noncompliance features by letter accompanying the submitted matter. Approval of drawings, cuts and samples by the Commissioner shall not be construed as a complete check or approval of the detailed dimensions, weights, gauges and similar details of the proposed articles. The conformance of such details with the contract requirements, together with the necessary coordination of dimensions and details between the various elements of the work, and between the various subcontractors and suppliers, shall be solely the responsibility of the contractor, approval of submitted matter notwithstanding. All submitted material shall be tendered complete, and at one time. PARTIAL SUBMITTALS WILL NOT BE CONSIDERED. No work shall be started before written approval is received. In general, the items to be submitted shall include but shall not be necessarily limited to the following:

1. Complete and fully dimensioned hatch plan, machine room and sections of hatch plan (i.e. elevation) including pit depths, car run-by, equipment sizes, etc. Contract plans (from bid package) shall not be used for filing purposes.
2. Schedule of work showing commencement and completion dates.
3. Work schedule breakdown of elevator to be installed, showing construction sequence and allotted time in calendar weeks.
4. Written description of the mode and sequence of operation

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5. Complete information on elevator control system.
 6. Interior elevations and details of elevator car enclosures, details of car operating and signal fixtures including metal gauges, dimensions, hinge details, finishes, etc.
 7. Hoistway and car door panel drawing showing type and size with plan view and section view.
 8. Complete fixtures for cab and corridors.
 9. Detail of all elevator components including platform, car frame, pump unit, piston-cylinder assembly, landing device, hydraulic line with components, etc.
 10. Straight line diagrams of all control, operating, signal and other circuits with wire sizes and necessary cuts and other data on the several relays, switches and other devices.
 11. Conduit layouts showing sizes and runs of conduits with number and size of wires in each.
 12. Samples of all finishes.
 13. Samples of conduit, fittings, wires, devices and traveling cables.
 14. Complete information on all components required for the cab communication system including a description of the mode and operational features.
- C. Approval of drawings, schedules and other submitted matter will be general and shall not be construed as:
1. Permitting any departure from the contract requirements.
 2. Relieving the Contractor of the responsibility for any errors, including details, dimensions, materials:
 3. Approving departures from details furnished by the Commissioner.
- D. If drawings, schedules or other submitted matter shows variations from the contract requirements, the Contractor shall describe such variations in his letter

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of transmittal. If acceptable, the Commissioner may approve in writing, any or all such variations. If the Contractor fails to describe such variations, he shall not be relieved of the responsibility for executing the work in accordance with the contract, even though which drawings or schedules may have been approved.

- E. Submissions, which are disapproved, shall be resubmitted with two weeks with all revisions circled and annotated with the appropriate revision number.
- F. Samples: Where submissions are called for in the specifications, or when otherwise required by the Commissioner, the Contractor shall submit duplicate samples of materials, appliances, finish or other items included in the work. Such samples shall be approved by the Commissioner before the work is executed. Samples shall be submitted in ample time before work is installed, to permit sufficient time for Commissioner's consideration. Samples shall be accompanied by a label, or shall be properly marked, indicating the type and brand of material, its place of origin, the name of the producer, the Contractor's name and the name of the project for which the material is intended.

1.9 MANUFACTURE AND INSTALLATION OF EQUIPMENT

- A. Quality: Materials and products shall be the best for each type or class. They shall be new, sound, uniform in quality, size, shape, texture and color, as each case may require, and free from cracks, warping and other defects which might impair their strength, appearance, performance, durability or service ability.
 - 1. Materials and products shall be of those manufacturers having established reputations for products, which are of high quality, are practical and durable, and require minimum of maintenance. Manufacturer shall have ample facilities for producing and delivering to meet construction schedules.
 - 2. The Contractor shall unload, haul, and pile material delivered for the project and shall assume all responsibility for insurance, coverage, care and protection of same after unloading.

1.10 REQUIREMENTS

- A. The completed elevator installation shall conform to

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ASME A17.1 and ASME A17.2 as modified by the NYC Building Code except as specifically otherwise indicated or specified. All material and equipment shall be new unless otherwise specified and indicated. Equipment shall be the product of a manufacturer regularly engaged in the manufacture and installation of this type of equipment. Design and construction of the equipment and parts subject to wear shall be such that similar machines and devices provided will be completely interchangeable. Working parts shall be accessible for inspection, servicing and repair. Adequate means shall be provided for lubrication of all wearing parts that require lubrication.

- B. In all cases where a device or part of the equipment is referred to herein in the singular, it is intended that such reference shall apply to as many devices as are required to complete the installation.
- C. All work called for in the specifications applicable to each separate section but not shown on the contract drawings in their present form, or vice versa, is required and shall be performed by the Contractor even though it were not specifically delineated or described.
- D. Work not particularly specified in the specifications nor detailed on the contract drawings but involved in carrying out their intents or in the complete and proper execution of the work, is required and shall be performed by the Contractor.
- E. Should the Commissioner require that any portion of the conveying system or equipment be operated prior to final completion and acceptance of the work, such operation shall be under the Contractor's direct supervision, but such preliminary operation shall not be construed as an acceptance of any of the work.

1.11 DELIVERY, STORAGE & USE OF THE PREMISES

- A. Contractor's Use: The Contractor shall confine his equipment, the storage of materials and the operations of his workmen to the elevator machine room, hoistway and pit and any other staging area, which may be provided by the Commissioner, and shall not unreasonably encumber the premises with his materials. The Contractor shall be solely responsible for safe guarding this equipment.
- B. Materials shall be delivered to the site ready for use,

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in the approved manufacturer's original and unopened containers and packaging, bearing labels as to type of material, brand name and manufacturer's name. Delivered materials shall be identical to approved samples.

- C. Materials shall be stored under cover in a dry and clean location, off the ground. Delivered materials which are damaged or otherwise not suitable for installation, shall be removed from the job site and replaced with acceptable materials.
- D. It will be the Contractor's responsibility to keep all of his materials stored within the boundaries of the area assigned to him and to store his material in a neat and safe manner.
- E. Contractor shall not load or permit any part of the structure to be loaded with a weight that will endanger its safety.

1.12 SAFETY & ACCIDENT PREVENTION

- A. The Contractor shall comply with all the health and safety regulations of governing codes, laws and ordinances. Contractor shall take all reasonable steps and precautions to protect health, and minimize danger from all hazards to life and property. The Contractor is responsible for conducting all work activity associated with this project in strict conformance with all applicable OSHA standards and/or local and state regulations. The Contractor is solely liable for enforcement of these safe practices in his operation.

1.13 DAMAGE

- A. Should the building be damaged outside of the zone of operations of the Contract due to work of the Contract, the Contractor shall report the conditions and circumstances to the Commissioner and shall make all necessary repairs and replacements to such damaged work at his own expense with new materials to identically match existing similar work in every respect as approved.

1.14 CUTTING, PATCHING AND DRILLING

- A. In addition to the requirements of the "General Conditions", the following conditions are required:

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1. No holes in the building structural member shall be made without the written permission of the Commissioner. However, if the hole in the structural member is necessary, the contractor shall submit the request with all detail such as location, member affected, size of hole, method of making hole etc.
2. Cutting of metal shall be performed per approval and in accordance with OSHA and NFPA requirements. Provide fire extinguishing equipment and proper ventilation as described below.

1.15 MISCELLANEOUS

- A. Neat and smooth steel sleeves arranged for cement curbs shall be placed through all slabs of concrete or other material for openings.
- B. Metal guards shall be placed around exposed moving machinery and belts in the elevator machine rooms where required and where directed by the Commissioner.

1.16 PAINTING

- A. All ironwork existing or installed by the Contractor and exposed in the hoistway or adjacent thereto, shall be cleaned and painted with one shop coat of an approved rust inhibitive paint. After erection in the field and final adjustments, bare spots on ironwork shall be touched up. Final field coat of paint shall be applied by the Contractor. Field coat shall be similar to shop coat.
- B. The power unit shall be given two field coats of an approved color and then varnished. All cast iron frames of the machine shall be filled, rubbed smooth before painting. All exposed surfaces of the machine room equipment, including controller cabinets, shall be given one coat of special machinery paint and in addition, a field coat of approved color and then varnished.
- C. Power units, controllers, and other panels shall be identified by means of approved templates.
- D. Floor number designations shall be neatly painted on the hoistway side of doors at each floor.

1.17 QUALITY ASSURANCE

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A. Company Field Advisor

Secure the services of a Company Field Advisor for the following:

1. Render advice regarding installation, adjustment and operation of equipment.
2. Witness tests and certify with an affidavit that the equipment installed is in accordance with contract documents and is operating properly.
3. Explain available service programs to facility supervisory personnel for consideration.

B. Regulatory Agencies:

New York State and New York City Department of Buildings.

C. Comply with requirements of ASME A17.1.

1.18 CLEANING, ADJUSTMENT AND FINAL ACCEPTANCE

A. Cleaning: The Contractor shall at all times keep the premises, clean and free from excess accumulation of waste materials or rubbish caused by Contractor's operations.

B. Adjustments and Removals: After completion of work, and before the issuance of Certificate of Final Acceptance, work shall be thoroughly cleaned, and the elevator properly adjusted, so that the system is in proper operating condition. Contractor shall remove from site, all debris, and associated materials which are no longer required as a result of work performed under the Contract to be left as part of finished work, and shall remove all stains and defacements caused by the Contractor's work. The entire work shall be left in a clean condition, satisfactory to the Commissioner.

C. Final Acceptance

Upon completion of work, the contractor shall arrange for building department inspection. The elevator work accepted by the Commissioner in complete respect including the signed inspection certificate from the building department or authorized agency shall be considered final acceptance by the Commissioner.

1.19 FIELD ADJUSTMENT AND TEST OF ELEVATOR

- A. The elevator specified herein shall be adjusted to make comfortable, smooth, rapid and accurate landings, properly coordinated with the door operation and acceptable to the Commissioner. All hoist doors shall be adjusted to operate smoothly, rapidly and without shock or slam and to the satisfaction of the Commissioner. The control system shall provide a smooth acceleration and retardation as finally approved by the Commissioner.

The adjustments shall be properly maintained, and any required corrections shall be made by the installer during the maintenance period.

- B. The Contractor shall furnish all labor, materials, equipment and properly calibrated instruments for making all field tests.
- C. A full load test, as per ASME A17.1 and A17.2 shall be performed on the elevator prior to the acceptance of the work.

The elevator shall be subjected to a test for a period of one-hour continuous run with full contract load in car.

- D. FLOOR LEVELING TEST - Floor leveling device shall be tested for accuracy of landing at all floors with no load in car, in both directions of travel. Accuracy of floor landing shall be within 1/8" of landing both before and after full load run test.
- E. Tests shall be made during regular working hours.
- F. If tests show that the equipment is in any way defective, of poor workmanship, at variance with the requirements of the Contract Documents, or dangerous or objectionable in operation, the Contractor shall make all necessary changes and remedy all defects at his expense, to the satisfaction of the Commissioner, and also pay for the expenses of all subsequent tests until all equipment is acceptable.
- G. Upon completion of satisfactory tests, secure and furnish to the Commissioner, certificates from all departments having jurisdiction, that the elevator and related equipment have been inspected and approved.
- H. Approval and acceptance of equipment by the Commissioner

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is contingent upon prior approval of the above referenced authorities, Consultant, and compliance by the Contractor with all requirements of such authorities and the Contract Documents.

1. Notices of all tests shall be given to the Commissioner carrier at least ten days in advance of the several tests.
- J. Any alignment, testing, static and/ or dynamic balancing, removal, or replacement of internal machine components must be verified by the Commissioner.

1.20 INSPECTION OF THE WORK

- A. The Commissioner and assigned representative shall at all times have access to the work wherever it is in preparation or in progress, and Contractor shall provide proper facilities for such access and inspection.
 1. The Commissioner shall have the right to reject or require correction of materials and workmanship, which are defective. Rejected materials shall be removed from the premises and satisfactorily replaced with proper materials without additional cost.
 2. Should it be necessary by the Commissioner at any time before final acceptance of the work, to make examination of work already completed by removing or tearing out work, Contractor shall, upon request, promptly furnish all necessary facilities, labor and materials required. If such work is found to be defective, Contractor shall defray all expenses of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of drawings and specifications, the Contractor shall be reimbursed for the removal and replacement of the work.
 3. Failure by the Commissioner during the progress of the work or rejected materials or work not in accordance with the drawings and specifications, shall not be deemed an acceptance thereof, or a waiver of defects therein, and no payment and partial occupancy of the premises shall be construed as an acceptance of the work or materials.

1.21 INSPECTION, PERMITS AND TESTS

- A. The Contractor shall obtain and pay for any necessary municipal and state inspections as required, and also make such tests as may be required by the regulations of such authorities and the Commissioner. These tests shall be made in the presence of the Commissioner.

Contractor shall modify and make necessary adjustment and/or replacement of components, until all tests are approved by the Commissioner. The Commissioner shall be issued a letter of inspection report upon receiving for contractor's record and information.

1.22 RECORD DRAWING FOR ELEVATOR

- A. In addition to the drawings specified under the "General Conditions", the Contractor shall furnish to the Commissioner, for record and operating purposes, the following record drawings for the elevator furnished under this Section:
1. Elementary Diagrams for power and signal systems.
 2. Wiring Diagrams showing all external connections between equipment, devices and power and signal panels.
 3. The Record Drawings shall include the layouts and diagrams enumerated under the heading "WORKING DRAWINGS AND SAMPLES".
- B. Complete sets of all elementary wiring and drawing diagrams for elevator, showing the work as actually installed i.e., "as-built" drawings. The wiring diagram shall be printed on Glossy long life laminated paper. The wiring diagram shall be sequentially numbered (i. e. 1 of 5, 2 of 5, etc.) All wiring prints shall be in the hard binder and secured in the machine room at acceptable location.
- C. All record drawings shall be of the "as-built" type with floor markings indicating actual floor designations.
- D. The manual shall include the complete detail of components identified by part number.

1.23 INSTRUCTION AND TECHNICAL DATA

- A. Furnish set of neatly bound instructions giving the method of control, diagnostics and sequence of operation

5. Velis Associates, Inc.
5. Otis Elevator Company.
6. Thyssenkrupp Elevator Company.

C. Cabs:

1. CEMCO Lift Elevator Systems.
2. Velis Associates, Inc.
3. National Cab and Door Company.
4. CEC Cab Company.
5. Tyler Cab Company.
6. H&B Cab Company.
7. Otis Elevator Company.
8. Thyssenkrupp Elevator Company.

D. Car and landing signal:

1. Monitor Controls.
2. EPCO.
3. G.A.L. Corporation.
4. Innovation Industries.
5. Otis Elevator Company.
6. Thyssenkrupp Company.

E. Elevator controls:

1. Motion Control Engineering (MCE) Inc.
2. G.A.L. Corporation.
3. Elevator Systems, Inc.
4. Computerized Elevator Control Corporation.

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5. Otis Elevator Company.
6. Thyssenkrupp Elevator Company.

F. Car door safe edge:

1. G.A.L. - Scanguard 8000.
2. Janus - Panaforty Plus.
3. Adams - I.C.U. / Plus.
4. Tri-Tronics Company, Inc.
5. Otis Elevator Company.
6. Thyssenkrupp Elevator Company.

2.02 ELEVATOR SCHEDULE

All items mentioned shall be new and as approved. It is not the intent of this schedule to itemize each component necessary to complete the work specified herein as the Contractor will be required to provide all components necessary to complete the work as specified herein whether or not included in the schedule.

Type:	Dual Piston Holeless Hydraulic Passenger Elevator
Power Supply:	208-60-3
Capacity & Speed:	3,500 pounds at 80 feet per minute
Floor Served:	1 and 2 (In line)
Travel:	11'-4"
Operation:	Simplex, selective/collective with Independent Service and Firefighter's Service Operation (Phase I & II).
Power Unit:	Dry Pump Type
Pump Motor:	30 Hp

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Controller: Microprocessor based

Guide Rails: 15 lb. "T" Rail

Jack Assembly: Twin jacks

Platform: 5'-8" Wide x 8'-2" Deep

Car Enclosure: 5'-4" Wide x 7'-2" Deep

Hoistway Entrances: 3'-6" X 7'-0" Two Speed Slide

Car Door Size: 3'-6" X 7'-0" Two Speed Slide

Car Door Operation: Powered Automatic - AC

Wiring: All wiring, conduit and junction boxes as needed

Fixtures: Car operating panel with emergency light, digital car position indicator, hall push stations and car travel lantern.

Communications: New hands free emergency communications device and intercom system as required by Code.

ADA Compliance: Comply with ADA requirements to accommodate the physically disabled including applied floor markings on each hoistway entrance door jamb and appropriate markings integral with car operating panel, floor by-passing chime, 2:1 chimes, etc.

Hoistway Switches: Top and bottom limit switches.

Car Top Inspection Station: New to comply with present Code requirements.

Pit Ladder: Steel ladder extending 48" above access landing.

Pit stop switch: Adjacent to pit ladder

Buffers: Spring

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Sump Pump Location: Pit

Emergency power: Battery powered emergency lowering device

2.03 ELECTRIC SERVICE

- A. The power supply is 208 Volts, 3 phase, and 60 hertz, AC. The lighting supply is 120 volts, single phase, and 60 hertz, AC.
- B. The system voltages stated on drawings are the rated voltages at the main switchboard and are subject to the ordinary fluctuations with demand, etc. The elevator shall operate successfully with any load up to contract load at any voltage at the starter panel terminals not more than 10 percent above or below the rated system voltage, but not necessarily in accordance with the high standards of performance established herein. These standards of performance shall, however, be met when the voltage at the terminals of the controllers does not vary more than 5 percent above or below the rated system voltage.
- C. Before proceeding with the manufacture of any of the electrical equipment, the Contractor shall verify the voltage and other characteristics of electric service.

2.04 GENERAL DESIGN AND CONSTRUCTION REQUIREMENTS

- A. All elevator equipment and materials shall be new.
- B. All of the elevator equipment shall be designed, constructed, installed and adjusted to secure the best commercial available results with respect to smooth, quiet, convenient and efficient operation, durability, economy of maintenance and operation, and the highest standards of safety. The car speed between acceleration and retardation periods under all conditions and loads from no load to full load up or down shall not vary more than 5 percent from the scheduled contract speed.
- C. All elevator equipment shall conform to the best commercial standards with respect to design, construction, operating results, efficiency, etc.

2.05 MECHANICAL DESIGN REQUIREMENTS

- A. The following typical requirements shall apply to all parts of the work and are supplementary to other requirements noted under the respective headings.
- B. All bearings shall be liberally sized in accordance with the best commercial elevator usages which have proved entirely satisfactory on heavy-duty installations.
- C. All bolts used to connect moving parts, bolts, carrying hoisting stresses and all other bolts, except guide rail bolts, subject to vibration or shock shall be fitted with adequate means to prevent loosening of the nuts and bolts. Bolts transmitting important shearing stressed between machine parts shall have tight body fit in drilled holes. All bolts shall be of proper grade and hardness.
- D. All bearing and sliding surfaces of shafts, pins, bearings, bushings, guides, etc., shall be smoothly and accurately finished. The shaft shall be assembled and installed in accurate alignment and with working clearance most suitable for the load, speed, lubrication and other conditions of use. During the maintenance period, all bearings shall be regularly checked for any tendency to run hot and defects corrected in an approved manner.
- E. Protection from moving parts: Belts, pulleys, couplings, projecting set screws, keys, and other rotating parts located so that any person can come in close proximity thereto, shall be fully enclosed or properly guarded.

2.06 ELECTRICAL DESIGN REQUIREMENTS

- A. The following typical requirements shall apply to all parts of the work, and are supplementary to other requirements noted under the respective headings.
- B. The design and construction of the motors shall conform to the requirements of these specifications. The elevator motor specified herein and transformer shall be capable of meeting the I.E.E.E. and NEMA standard tests for maximum temperature rise of 50 degrees C. at full rated capacity for the duty specified. The motor and relay shall be reasonable free from magnetic hum, winding noise and vibrations.
- C. Insulation on motor coils and windings and on all

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insulated switch, relay, brake, and other coils shall conform to the requirements for minimum Class "E" insulation, as defined in Standards for Rotating Electrical Machinery.

- D. Nameplates shall be provided giving the information required by the N.E.C. Characters shall be easily legible.
- E. Hall signal circuits shall not exceed 48 volts.
- F. In the machine room, hoistway, etc., the equipment shall be laid out and installed so as to allow as adequate and convenient access for maintenance as space conditions and Code will permit.

2.07 ELECTRIC WIRING

- A. Wiring: Insulated wiring shall have a flame retarding and moisture resisting outer cover and shall run in a metal conduit, metallic tubing or wire ducts. All insulated conduction and conduit, or tubing, as well as fittings including metal boxes, troughs and ducts, shall comply with the requirements of the National Electric Code.
- B. Provide ten percent spare wires between each controller, selector, hatchway junction box and starters panel; all spares to be properly tagged or otherwise identified with clear and indelible markings.

2.08 TRAVELING CABLES

- A. Provide traveling conductor cables which shall be an approved assembly of maximum flexibility. The construction of the cables shall have been successfully used in comparable heavy duty installations, without developing any defects requiring or indicating abnormal maintenance. The complete cable shall be sufficiently flexible to readily adapt itself to all changes in the position of the car and hang straight and without twist. The cable shall not be of the type requiring pre-hanging. The cables shall bend 360 degrees with an inside radius of one foot without any permanent set and cracking of the outer covering. The open loop shall not twist upon itself. All traveling cables shall be provided with steel or Kevlar strands and be free of all jute interstice fillers. Provide separate four (4)

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twisted pairs of shielded wires of polyester Mylar wrap with 100% coverage and a drain wire for telephone communication system for the car. Car lighting, receptacles and fans shall be provided on an individual circuit. Provide separate coaxial, specially designed for video system, cable for CCTV.

- B. Traveling conductor cables shall terminate in terminal boxes securely supported at the halfway in the hoistway and on the bottom of the car platform. These boxes shall have approved connection strips for making all conductor connections and approved strain devices or installation blocks for connecting the steel or Kevlar supporting strands and relieving the conductors of all strain. These boxes shall have screwed on or bolted covers of material and thickness as specified for the boxes. The terminals shall be marked in a legible permanent manner. Boxes shall be not less than No. 10 USSG steel or galvanized cast iron boxes as approved. Provide additional cab wiring and conduit as required.
- C. The swing of the traveling conductor cables shall be checked when the elevator is running, and all shields, screens and pads necessary to prevent chafing of traveling cable insulation shall be installed. The natural loop in the traveling cables shall not be less than 15 inches unless otherwise specially approved by the Commissioner. The cable shall be of a type that is torque free thereby eliminating pre-hanging, twisting and cross over. Install beam pads as necessary to prevent chafing of trail cable insulation.
- D. The traveling conductor cables and the corresponding groups of conductors connecting these cables to the control and signal panels and to the car operating panel shall each contain spare conductors equal in number to not less than 20 percent of the number of working conductors of the same size and type. Not less than two spare conductors shall be provided in each cable and corresponding group of wires containing less than five working conductors. Separate cables shall be provided for lighting, signaling, control, and safety switches. Include four (4) pairs of shielded wire for each car for communications. Car lighting, receptacles and fans shall be provided on an individual circuit.
- E. Multiple traveling conductor cables may be installed in single installation blocks provided 3" to 4" separation between cables at bottom of loops are used.

2.09 OPERATION OF ELEVATOR

Using a microprocessor-based controller, operation shall be automatic by means of the car and hall buttons. If all calls in the system have been answered, the car shall park at the last landing served.

2.10 HYDRAULIC POWER UNIT

The hydraulic power unit shall be of compact design suitable for operation under the required pressure. The pump and motor shall be connected by a v-belt drive assembly. The control valve shall control flow for up and down directions hydraulically and shall include an integral check valve. A control section including control solenoids shall direct the main valve and control: up and down starting, acceleration, transition from full speed to leveling speed, up and down stops, pressure relief and manual lowering. All of these functions shall be fully adjustable for maximum smoothness and to meet contract conditions. Design shall be based on 80 elevator starts per hour. The power unit shall be mounted on vibration sound dampeners designed to isolate the unit from the building structure. The power unit shall also contain a low-pressure switch (as required) and a tank shut-off valve. The power unit shall be provided with a muffler to reduce pulsation and noise, which may be present in the flow of the hydraulic fluid. A silencer that contains an internal bladder and pressurized by air is not acceptable.

- A. The manual lowering valve shall be clearly labeled to indicate its function and shall permit lowering the elevator at slow speed.
- B. The pressure valve shall be located between the cylinder and hydraulic control valve unit. The loss of pressure at top of the cylinder shall activate the pressure switch to prevent operation of the lowering valve and the circuit for operation of safety condition per elevator code.
- C. An anti-creep leveling device shall be provided to maintain the car within 1" of the landing irrespective of the position of the hoist door. The system shall work as per ASME A17.1 code.

2.11 HYDRAULIC OIL

The hydraulic oil shall be of the grade recommended by the manufacture of hydraulic system. The oil shall be suitable to all components including seals & gasket of valve unit,

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pump unit, and cylinder piston assembly. A tag stating the recommended type of oil for the system shall be mounted on the oil tank. Oil tank and hydraulic system shall be provided with a minimum of 10 gallons of extra hydraulic oil in the oil tank. The tank shall be calibrated for minimum and maximum oil level for the elevator.

2.12 HYDRAULIC PIPES AND PIPE FITTINGS

- A. Provide all necessary piping connection between the hydraulic cylinder and hydraulic pump unit. The hydraulic line shall be sized to accommodate required oil flow and system operating pressure as required meeting performance requirements. The oil lines shall be supported by approved brackets at spacing not more than seismic requirements of the elevator code and at least two means of supports between fittings. Pipeline stands and support shall be securely fastened to the building structure. The oil line shall be routed so as to minimize the number of bends, offsets, and elbows.
- B. When piping passes through wall, sleeve shall be provided of the size with minimum 1 inch clearance between pipe and sleeve. The sleeve shall be fitted with fiberglass packing and seal both ends with fire proof, no-hardening mastic of $\frac{1}{4}$ inches minimum thickness.
- C. All piping shall be seamless steel not less than schedule 80 and complying ASTM 53 grade B. All piping shall be threaded.
- D. A quick acting gate type shut-off valve shall be provided in the machine room near pump unit.

2.13 CONTROLLER

A new microprocessor-based controller shall be provided along with a solid state starter. Include necessary starting switches together with all relays, switches, solid-state components and hardware required for operation, including door operation, as described herein. A three (3) phase overload device shall be provided to protect the motor against overloading.

All available options or parameters shall be field programmable, without need for any external device or knowledge of any programming languages. Programmable options and parameters shall be stored in nonvolatile memory. As a minimum, there shall be a 32-character alphanumeric display

used for programming and diagnostics.

Controller shall be provided with a battery lowering device pre-wired, pre-tested and integrated into the standard enclosure.

2.14 INSPECTION AND INDEPENDENT SERVICE OPERATION

The elevator shall be designed with Inspection Service and Independent Service features.

2.15 EMERGENCY FIRE FIGHTERS' SERVICE

- A. The controller system shall be wired in such a manner to affect the operation as herein after described in compliance with New York State and local codes.
- B. Furnish and install three (3) position keyed switch and illuminating fire emblems in corridor at main level. The cover plate of the key switch shall be clearly identified in red lettering as "RESET", "OFF", and "ON" with "OFF" position as center position. The key shall be removable from any position.
- C. Emergency Fire Fighters' key switch shall be provided in the elevator car operating station.
- D. Once emergency terminal return has been initiated by activation by placing the Fire Fighters' key switch, located in Main Lobby, to "ON" position, the following operation shall go into effect. The feature described herein below is guide line, but not limited to meet the ASME A17.1 code.
 - 1. If traveling away from the Fire Recall floor, shall stop at the next landing floor without opening its doors, reverse direction and proceeds non-stop to the Fire Recall floor lobby. If traveling toward the Fire Recall floor, shall continue non-stop to the Fire Recall floor.
 - 2. Door reopening devices for power-operated doors, which may be affected by smoke or heat so as to prevent door closure, shall be rendered inoperative.
 - 3. Upon return to the Recall Floor lobby, the car and hoistway doors shall open and remain open. The Fire Fighters' indicating lights in elevator shall remain on.

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4. Emergency stop switch shall be rendered inoperative as the elevator start moving from landing. The inoperative emergency stop switch during fire recall shall remain inoperative during phase I operation.
 5. All car and corridor call buttons and all door opening and closing buttons shall be rendered inoperative, and all call register and directional lantern shall be cancelled and remain inoperative. Position indicator shall remain in service.
 6. The car shall be provided with visual and audible signal system that shall be activated to alert the passenger that car is returning nonstop to the designated floor. The signal shall remain active until the car has return to the designated floor.
- E. Furnish and install, in the elevator cab, a three-position keyed switch marked "OFF", "HOLD" and "ON" (in this order) with the "HOLD" position as center position and labeled "FIRE OPERATION". This key switch shall become effective only when at the designated level phase I is in the "ON" position has been activated and the car has returned to the designated floor by phase I of the Fire Fighters' Service.

The key shall be removable in "HOLD" or "OFF" position. The "OFF", "HOLD" and "ON" positions shall not change the operating until the car is at landing with door open.

The elevator at the Fire Recall level during phase I of Fire Fighters' activation shall be available for phase II of Fire Fighters' by turning the Fire key switch in the cab to "ON" position and overriding all keyed switches and programming. During phase II of Fire Fighters System, the elevator shall operate as follows.

1. Car and hoistway door operation shall subject to continuous pressure of the "DOOR OPEN" button. However, if the "DOOR OPEN" button has been released before the doors are completely open, they shall automatically re-close.
2. Provision shall be made to all operative that, after having made a floor selection change such selection if so desires, by pressing a "CANCEL" button. When activated, all registered calls shall

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be cancelled and traveling car shall stop at or before the next available landing.

3. The opened car and hoist doors shall be closed by continuous pressure on the "DOOR CLOSE" button. If the button is released prior to doors reaching fully closed position, the doors shall automatically re-open.
 4. All corridor call buttons and directional lantern shall remain inoperative.
 5. The elevator shall only be removed from in car Fire Fighters' Service operation by moving the Emergency Fire key switch in the car to "OFF" position and the elevator is at the Main Recall floor.
- F. Provide a visual signal the elevator that will indicate when Emergency Fire Fighters' recall is in effect.
- G. Provide a fire recall audible signal which will sound in the cab when Emergency Fire Fighters' recall is in effect. Audible signal shall stop sounding when the elevator returns to the Main Lobby and the doors open.
- H. The key switches and instructions shall be identified with appropriate designations in "Red" lettering.
- I. All cover plates for such switches & buttons shall bear the lettering "FIRE RECALL" and the operating instruction as per ASME A17.1.
- J. The Fire Fighters' Service key switch shall be operable by city Fire Department standard keys only.
- K. "CALL CANCEL" button and vandal resistant visual Fire signal shall be adjacent to the Fire key switch in the elevator cab.
- L. When the phase II of Fire Fighters' switch, located in elevator cab, is in the "HOLD" position, the elevator shall be on Fire Fighters' phase II operation. The car shall remain at the landing with its doors open. The door close buttons shall be inoperative.
- M. Fire Fighters' key switch shall be in a car-operating station.
- N. All wiring shall be high temperature fireproof type. Wiring shall run in hoistway duct and steel pipe in the

approved manner to meet the electrical code.

O. Demonstrate the Fire Fighters' system test in presence of the Commissioner or authorized representative.

2.16 CAR GUIDE RAILS AND BRACKETS

A minimum of 15# guide rails shall be provided for the car consisting of planed steel tees erected plumb and securely fastened to the hoistway framing by heavy steel brackets. The ends of all guides shall be tongued and grooved, forming matched joints and shall be connected with steel splice plates. Brackets are steel angles bolted together, one fastened to wall and the other clipped to the guide rail. Rails shall be located as required for the new elevator configuration. Provide all necessary rail and jack supports including inserts and brackets. Coordinate installation of rail inserts with other trades as required.

2.17 SELECTOR

- A. Provide a magnetically operated selector and leveling system shall be located on top of the car. The operation of the selector shall be to govern function such as direction of travel, automatic stopping, and leveling at landings. The selector shall have a correction feature at least once in each direction of travel and at landings.
- B. The selector tape shall run from top to bottom of the hoistway with spring tension compensation. The tape shall be metallic type with weather resistant coating. The magnet sensor shall be firmly attached to the tape.
- C. The reader head located on top of the car shall be provided with low friction sliding gibs at both ends.

2.18 LIMITS & LEVELING SWITCHES

- A. Limit switch package shall consist of switches and brackets that mount to the back of the rail. Switches include top and bottom slowdown, top and bottom directional and top and bottom final. The elevator will be provided with an automatic leveling device which will bring the car to a stop within 3/8" of the landing level regardless of load or direction of travel. Landing level will be maintained within the leveling zone irrespective of the hoistway doors being open or closed.
- B. All final limits shall be individually rail mounted and

independently adjustable. The enclosure of the terminal switches shall meet NEMA 4.

2.19 TOP OF CAR OPERATING STATION

- A. Provide the elevator with an operating device, mounted to the crosshead which will permit slow speed car operation for purposes of adjustment, maintenance and repair, This control shall consist of five buttons listed "UP", "DOWN", "RUN", "EMERGENCY STOP SWITCH" (red in color), an "INSPECTION SWITCH" and a light fixture with bulb protection enclosure and switch. The inspection station shall be provided with fire fighters' buzzer and indicator light.

2.20 HOISTWAY ENTRANCES

The entrances at each landing shall be side opening two speed horizontal slide having a clear jamb opening as shown on drawings. Door panels and frames shall have a finish as approved by Commissioner.

A. FRAMES

Frames shall be of bolted construction for a one piece unit assembly comprised of head and side jamb sections. All frames shall be securely fastened to sills and header and shall be of #14 gauge sheet material. The jamb width shall be sufficient for the installation of the hall button fixtures.

B. SILLS

Provide nickel silver sills with non-slip wearing surfaces and grooves for door guides. Sills shall be supported on steel angles furnished and installed.

C. FASCIA GUARD

Fascia plates, fabricated from #14 gauge steel, shall be fastened to the header and the sill above.

D. TOE GUARD

A toe guard, fabricated from #14 gauge steel, shall be furnished at the lowest landing beveled to the wall.

E. DUST COVER

A dust cover, fabricated from #14 gauge steel shall be furnished at the highest landing.

F. HEADERS

Headers of sufficient size and thickness to provide support for the frame and hangers, shall be securely

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fastened to the strut angles and shall include integral hanger tracks.

G. STRUTS

Struts angles shall be of sufficient size to support the entrance and shall be securely fastened from sill to underside of building steel above.

H. HANGERS

Hangers shall be of the sheave type, two sheaves per door, rotating on a precision ball bearing. The roller shall be on an eccentric stud to provide adjustment. Hangers shall be integral and welded to the top of the doors.

2.21 DOOR HANGER, TRACK, GIBS AND CLOSER

A. Hoistway Door Hanger, Track, Gibs and closer.

The elevator hoistway sliding door panel shall be equipped with 2-point suspension sheave, hanger and track complete. Sheave shall be of hardened steel or composition approximately 2-1/4 inches in diameter medium speed operator. The sheave shall have ball bearing properly sealed to retain grease lubrication, and shall be mounted in housing attached to the door panel by two cap screws. Each sheave shall be equipped with adjustable ball bearing or approved sleeve bearing to take the up-thrust of the door. Sheave shall be quiet running.

B. Track shall be cold drawn high carbon steel of heavy section, with surface shaped to conform to the tread of sheave and roller. Drill and tap the entrance frame to secure the track with flat head machine screw to be mounted from hoistway side. Provide strut angle from floor to floor securely mounted to the building structure. The track shall be bolted to the strut angle.

C. Suitable means shall be provided to lubricate the tracks of the sheave.

D. Provide floor mounted door spring closers at each entrance.

E. Provide two (2) removable nylon or Teflon gibs with fire tabs on the underside of each hoistway door panel.

F. Provide a # 14 gauge minimum of 8" long zinc plated

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vandal resistant "Z" bracket at bottom of each hoist door located between door gibs. The bottom leg of "Z" bracket shall run in the sill groove. The "Z" bracket shall be mounted with minimum six countersunk screws on the back side of the hoist door.

2.22 ELECTRICAL INTERLOCKS AND DOOR CONTACTS

- A. The door at each hoistway landing shall be provided with approved type hoistway door interlock as required by Code.
- B. The door of the elevator car shall be equipped with approved electric contacts conforming to the requirements of the Code.

2.23 CAR FRAME, AND PLATFORM

- A. Construct the car frame of steel channels and angles securely bolted, riveted or welded. Reinforce and brace the frame so as to relieve the car enclosure of all strain. Provide new entrance toe guard. The toe guard shall be of minimum 12 gauge baked enamel steel plate. The toe guard shall be of full width of the opening plus one foot on each side and properly secured to avoid any undue noise.
- B. The new platform shall be constructed of a structural steel frame filled with two layers of marine plywood. The underside of the platform shall be covered with baked enamel painted, galvanized sheet steel to meet the fire rating as per code.
- C. All exposed metal shall be factory painted with a minimum of one primer coat and two coats of rust inhibiting paint.
- D. Provide a nickel silver sill for the platform.

2.24 CAR GUIDE ASSEMBLIES

The top and bottom of the car frame shall be provided with suitable slide guide shoes of the self-aligning swivel type. A removable polyethylene gib shall be provided with each guide shoe.

2.25 ELEVATOR CAR ENCLOSURE

- A. A new cab shall be furnished and installed as shown on the contract drawings.

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- B. The car enclosure shall be constructed to fit the sling, platform and crosshead. The cab shall be in accordance with the contract drawing and as specified herein. The cab is to be manufactured in a first class workmanship manner, and shall be so constructed and installed as to be free of squeak and noise.
1. Cab Lighting: Provide recessed low voltage down lighting as shown on the contract cab drawing.
 2. Handrail: Provide 1 ½ inch flat bar of # 4 finish stainless steel. The handrail shall have bend ends towards cab wall and mounted on the rear and side walls. The handrail mounting block shall be replaceable, through bolted to cab panel.
 3. Top Emergency exit shall be provided in the ceiling and opening upward clear of crosshead, other structure, and car door operator. Emergency exit cover in the ceiling shall be hinged and held in place by non-removable fastening device, and shall be opened from top of car only. Provide a mechanical stop when door opens toward hatch. Provide top exit guard. The top emergency exit shall be provided with contact switch.
 4. Ventilation for the car enclosures shall be provided with a two-speed type exhaust ventilating blower unit mounted in the car ceiling. The ventilation blower shall be suitably isolated from cab ceiling, and shall distribute not less than 600 cubic feet per minute (free delivery) at top speed. The switch for the operation of the exhaust unit shall be provided in the car station service cabinet.
 5. The elevator car enclosure shall be provided with an emergency lighting system. Emergency light shall automatically turn on instantaneously as normal lighting power fails. The emergency backup power shall be capable of maintaining emergency light for four hours, operate alarm bell and run exhaust fan for minimum of one hour.
 6. Cab Flooring:
 - a. Provide the elevator with sub flooring to consist of a minimum of two layers of marine grade plywood.

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- b. The cab shall be provided with finish floor of thick one vinyl sheet and securely installed per manufacturer's guideline.
- c. The flooring shall be "ARMSTRONG" Laminate flooring (L6572) Color: Slate - Ebony Mist. Collection: Stones & Ceramics or approved equal.

C. Pad Buttons & Protection Pads:

Pad buttons and vinyl quilted vinyl pads shall be provided. Pads shall be of a size for complete protection of the sides, rear and front return panels. Provide stainless steel pad buttons. Provide with one (1) set of vandal proof nylon reinforced, quilted pads of a size to afford complete protection of all sides for the aforesaid cab. The outer skin of the pad on both sides shall be 3 ply poly scrim material not less than 12 oz. per square foot. Furnish heavy duty No. 6 spur grommets. Submit sample for approval.

2.26 CAR DOOR OPERATOR

- A. Door control to open doors automatically when car arrives at a landing in response to a normal hall or car call. Door operation will be automatic at each landing with door opening being initiated as the car arrives at the landing and closing taking place after expiration of a time interval. A car door electric contact will prevent starting the elevator away from the landing unless the car door is in the closed position. Doors will be arranged to remain open for a time period sufficient to meet disability requirements.
- B. Elevator doors shall be provided with a reopening device that will stop and reopen the car door(s) and hoistway door(s) automatically should the door(s) become obstructed by an object or person. Primary door protection shall consist of a two dimensional, multi-beam array projecting across the car door opening.

2.27 ELEVATOR FIXTURES

- A. All hall and car fixture faceplate shall be 1/8 inch thick.
- B. The hall and cab fixtures shall be #4 finish stainless steel. Borders and Handicap symbols shall be provided.

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- C. Fastenings for all exposed fixtures shall be secured with tamperproof Spanner head screws in the same material and finish as the fixture it is securing.
- D. All hall and car call buttons shall be one inch (1") in diameter with a jewel type illuminative indicator in center and made of the same finish as faceplate. The button shall be surrounded by a translucent halo (1-3/8 inch diameter) and shall illuminate in with L.E.D. lamps evenly spaced behind the halo. The button shall be vandal resistant type with restrictive movement of button. Pressure on a button shall illuminate the button to indicate that a call in the desired direction has been registered.
- E. The contractor shall provide opening size and location to install all corridor fixtures.
- F. Contractor to provide back boxes, grouting etc., for all fixtures.

2.28 CORRIDOR PUSH-BUTTON

- A. Provide corridor hall button fixtures with "UP" and "DOWN" buttons, at the intermediate landings, and single buttons at the terminal landings. All buttons shall be of the same finish as faceplate, as hereinbefore specified.
- B. Provide hall button fixtures at location to meet handicapped code and as per drawings. The Lobby Floor fixture shall include Fire Service key switch and light jewel. Fixture faceplates shall be 1/8 inch thick with material and finish as hereinbefore specified.

2.29 CORRIDOR POSITION INDICATOR

Provide corridor position indicator at main Floor (1).

- A. The position indicator shall of the L.E.D. type with characters of minimum 2" high with corresponding floor characters and car directional travel indicators. The up travel indicator shall illuminate 'green' while the down direction travel indicator shall illuminate 'red'.
- B. The cover plate shall be 3/16" stainless steel #4 finish.

2.30 CAR OPERATING PANEL

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- A. Car operating device for the elevator shall consist of a car operating panel shall include a series of push buttons numbered to correspond to the floor served, alarm button, a set of "Door Open" and "Door Close" buttons, Fire Service key switch, fire activation signal, call cancel button for Fire Fighters' service, emergency stop button, independent operation "UP" & "DOWN" buttons, service panel, cab communication grill with speaker, emergency light, engraving as per detail on the drawings. The service panel shall include the key switches for cab lighting, cab exhaust fan, independent service, inspection service, emergency test button, and electrical receptacle. The service panel shall be hinged lockable door suitable for certificate frame with lexan lens.
- B. The cover of the car operating panel shall stainless steel with # 4 finishes. The cover of the car station shall be provided with three telescopic chromium plated hinges and key switch lock plus screws at all four corners.

2.31 TELEPHONE CAB COMMUNICATION SYSTEM

- A. The Contractor shall furnish and install an auto-dial telephone communication system with speakerphone and complete wiring. The system is described in the following and is referred to as "Cab-communication System". The device located in the elevator cab shall communicate with a programmed phone number, a location in the lobby and the elevator machine room as per NYC appendix K.

The Contractor shall provide wiring from cab communication with junction box in the machine room and shall make final connection to the communication system.

- B. A speakerphone installed behind the cab operating station shall be auto dial type emergency telephone. The cab-communication system shall have "Push" button to activate the telephone and a led indicator. Provide sign of telephone and engraved letter "EMERGENCY PHONE" and "PUSH TO TALK" under the push button.
- C. The system shall be capable of programming two phone numbers. When cab-communication is established by pressing the "Push" button in cab, the phone dials the primary program number which has been programmed into memory M1. If there is a busy signal or if the call is not answered in six rings, the phone hangs up, goes off

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hook, and dials the secondary program number which has been programmed into memory M2. The speakerphone can differentiate between ringing, a busy signal, and an answered call. The speakerphone toggles between the two program numbers until the call is answered. The speakerphone disconnects automatically when the called number hangs up phone.

- D. The system shall be equipped with Back-up power supply to provide full operation of phone for four hours in the event A/C power failure.
- E. Red LED is lighted when the phone is activated and flashes when the call has been answered. LED goes out when the call is disconnected.

The cab-communication system shall be Rath Microtech or equivalent.

2.32 CAR POSITION INDICATOR

- A. The position indicator shall be green illumination type L.E.D. of minimum 2" high with corresponding floor characters and car travel indicators. The up travel indicator shall illuminate 'green' while the down direction travel indicator shall illuminate 'red'. The window of the indicator shall be provided with cover of high impact resistant material such as poly carbon or lexan.

The car position indicator shall be provided with floor passing gong of different tone than the travel gong. The intensity of the gong shall comply with ASME code.

- B. The cover plate shall be same as faceplate detailed above.

2.33 CAR LANTERN

- A. Car lantern shall be vandal resistance and shall be provided in the jamb of each cab opening. The car lantern shall be provided with illuminated type directional arrow show the travel of the elevator. The 'UP' indicator shall be with green and the "DOWN" indicator shall be with red. Car lantern shall remain illuminated until car leaves the landing.
- B. One of the car lanterns shall be provided with an audible travel directional signal to sound one gong for upward travel with 'UP' indicator and two gong for downward travel with "DOWN" indicator.

C. The indicator shall be flush with inside of door jamb.

2.34 HYDRAULIC PLUNGER - CYLINDER ASSEMBLY

- A. Each cylinder shall be constructed of steel pipe of sufficient thickness and suitable for the operating pressure. The top of each cylinder shall be equipped with a cylinder head with a drip ring to collect any oil seepage as well as an internal guide ring and self-adjusting packing. Each plunger shall be constructed of selected steel tubing or pipe of proper diameter machined true and smooth with a fine polished finish. Each plunger shall be provided with a stop ring electrically welded to it to prevent the plunger from leaving the cylinder. Each plunger and cylinder shall be installed plumb and shall operate freely with minimum friction. A steel packing gland with a phenolic guide bearing, wiper ring and packing especially designed for hydraulic elevator service shall be provided.
- B. Scavenger Pump - Provide an electrically operated scavenger pump that provides means to return oil to the system. System shall be equipped with a brass float assembly as manufactured by Leland Pump Company or equal.

2.35 BUFFER AND FOOTING STEEL

- A. Provide car buffers with footing steel of wide surface area on the floor for load distribution.
- B. The elevator shall be provided with spring buffer per ASME A17.1.
- C. The buffers shall have successfully passed engineering tests, and shall be certified to by Bureau of Standards, or an approved testing laboratory. Such certification shall cover range of speed and load requirements for this installation. All metal plate marked with name of manufacturer, type, stroke in inches and range of speed and load certified, shall be provided to all buffers.
- D. The footing steel shall be applied with primer and two (2) coat of rust inhibitive paint.

2.36 OVERSPEED VALVE (RUPTURE VALVE)

- A. Operation: The valve designed to stop the elevator in

the event of an over-speed condition caused by a broken supply line or an abnormally high rate of flow between over-speed valve and power unit. The rupture valve shall be installed and adjusted per manufacturer instruction, the copy of which shall be submitted to the Commissioner and consultant. The rupture valve shall be tested in presence of the consultant.

- B. Location: The valve shall be located next to cylinder inlet.

2.37 PIT STOP SWITCH

Provide pit switch for the elevator in the elevator pit to prevent operation of the elevator when the switch is in "OFF" position. The pit switch shall be located as required by Code.

2.38 ELEVATOR IDENTIFICATION PLATES

- A. Provide metal plates permanently secured to buffer, controller, machine room and disconnect switch etc., which shall identify the city elevator identification number, manufacturer's data, model and all other related information with 1 inch high engraved numbers filled with black paint.
- B. Provide a metal plate permanently secured to the controller or disconnect switch showing the Code edition which the elevator is installed under.

2.39 HANDICAPPED PROVISIONS

- A. Car operating panels shall be mounted so that the dimension from the floor to the centerline of the highest button does not exceed 48 inches, and the dimension from the floor to the centerline of the emergency buttons does not exceed 35 inches.
- B. The cab door shall be provided with non-touch type device to reopen the door if passenger is entering or leaving the cab while the door is closing.
- C. Provide floor designations with Braille and symbol per code, on both side jambs of the hoistway entrances, for the elevator visible from within the car and the elevator lobby at a height of 60 inches above the floor. Designations shall be a minimum of 2-1/2 inches high and

shall be as approved by the Commissioner.

- D. The cab shall be provided with emergency cab communication system suitable for handicap person.
- E. The travel directional gong shall sound once for the Up direction and twice for the Down direction.
- F. Provide an audible signal in the elevator cab and which shall sound to identify the passing a floor during elevator travel.
- G. Provide floor markings with Braille as required by handicap code adjacent to elevator car control button. The floor marking shall be integral with the faceplates and applied plates will be unacceptable.
- H. The centerline of hall buttons shall be located 3'-6", above the finished floor.

PART 3 - EXECUTION

3.01 GUIDE RAIL

- A. Verify that the guide rails are without any gaps at joints.
- B. Verify that the rail brackets comply with seismic requirement of the zone.
- C. Verify guide rails are securely mounted or anchored to hoistway framing at each floor.
- D. Check that the guide rails extend from pit floor to underside of the overhead of hoistway or provide extension as may be require.
- E. Verify that the guide rails are plumb and parallel, shim as required. Verify that the bolts are torqued as per manufacturer's recommended value.
- F. Verify that the splice plate is not interfering with supporting clamp and bracket.

3.02 INSTALLATION OF HYDRAULIC EQUIPMENT

- A. General

Install hydraulic pump unit, oil tank, valve and related

pipes in the machine room.

- B. Install piston-cylinder assembly on the pit floor with proper footing steel.
 - 1. The piston-cylinder assembly shall be plumb.
 - 2. The cylinder shall be properly supported.
 - 3. Inspect rupture valve and test according to manufacturer recommendation.
 - 4. Inspect the piston-cylinder assembly for any leaks.
 - 5. Inspect the function of air bleed valve.
 - 6. Inspect piston packing and seal for any leak.
 - 7. Inspect that piston is without any scratches.
 - 8. Inspect all piping for proper installation and leak.
 - 9. Inspect installation of pump unit operation, pressure gauge, relief valve, hydraulic valve unit.
 - 10. Test pressure relief valve and working pressure at full load.
 - 11. Check hydraulic valve operation and leak.
 - 12. Check oil level indicators in oil tank.
 - 13. Check oil level when car is at bottom and top floor.

3.03 INSTALLATION OF CONTROLLER

- A. Install elevator controller in the elevator machine room. The controller shall comply with ASME 17.5 code.
- B. Install components and integrate with controller for required operation of elevator.
- C. Field Quality Control
 - 1. Inspection:
 - a. Power Off: Inspect control equipment for dirt, dust, grease or other foreign material

that would prevent proper operation.

2. Power On:

- a. Run elevator up and down shaft, stopping at each floor. Check for accurate landing and smooth stop and start under all load conditions.
- b. With elevator running, inspect control equipment for excessive arcing, heating of coil, misalignment of relay, contactor or switch.

3. Test:

- a. Individually test each component for compliance with its specified function and operation.
- b. Demonstrate that elevator perform in accordance with required type of operation.
- c. Test elevator step by step as specified under function, and operation, in Part 2.

3.04 INSTALLATION OF CAR

A. Car Sling and Platform:

1. Verify car platform and sling between main guide rail are at equal distance on both side.
2. Align car and sling in hoistway, adjust guide in perfect alignment.
3. Clearance between car platform and hoistway door or entrance sill nose shall not exceed 1-1/4".
4. Check mounting of the guides shoes to car sling.

B. Car Enclosure:

1. Assembly of car enclosure and securely fastened to car platform.
2. Fasten door support structure for cab door.

C. Field Quality Control:

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1. Examine car enclosure for structural soundness. Determine if car enclosure is securely fastened to car platform.
2. Verify that top exit panel is in place.
3. Examine lighting fixture to determine if it is securely fastened, have required protection, and provide sufficient illumination.

3.05 INSTALLATION OF CAR DOOR OPERATOR

- A. Verify the installation of cab door operator including electric motor, belt drive, linkage, door control, wiring, safety edge, infrared protective device, etc.
- B. Lubricate all working parts.
- C. Proper wiring to door interlock etc.
- D. Verify installation of safety edge to cab door system.
- E. Field Quality Control
 1. Inspect component for proper operation ascertaining that the operator and component are neatly and securely installed and aligned.
 2. Test: Demonstrate that door operators perform in accordance with required operation. Check speed and force of the door not exceeding 25 lb/ft.
 3. Test: Safety edge operation including nudging.

3.06 LANDING SIGNAL EQUIPMENT

- A. General: Install elevator landing signal equipment and integrate with elevator control equipment for required operation.
- B. Power Supply for Signal Equipment: Install in elevator or machine room.
- C. Landing Fixtures: Installation of the riser for landing fixture.

3.07 INSTALLATION OF FIREFIGHTERS' AND EMERGENCY SERVICE EQUIPMENT

- A. Two-Way Voice Telephone Type Cab-Communication System:
 1. Install the system in accordance with the Company's

printed instructions.

2. Locate central equipment cabinet and battery in elevator machine room or in the car station.
- B. Test battery capacity and recharge time. Operate system for required number of hours and load conditions.

C. Firefighters' Emergency Service Operation:

Integrate components with elevator controller system for required operation.

D. Cab Emergency Light and Alarm System:

1. Locate the emergency cab light fixture in cab. Reinforce cutout in car panel for mounting of fixture.
2. Install wiring, relay, battery charger unit, contact as required to connect car emergency light unit to 120 volt power source on car, and to interconnect the 6" alarm bell on emergency light unit with emergency call button and emergency stop button in car operating panel.
3. Test battery capacity and recharge time. Operate one unit for required number of hours and load conditions.

E. Floor Number:

Paint minimum 4" high white gloss enamel numerals on back of each hoistway door and on elevator shaft walls between each floor.

3.08 WIRING INSTALLATION

A. Raceway Installation:

1. Raceway Type and Location:
 - a. Install ferrous metal conduit in all locations unless otherwise specified.
 - b. Flexible Metal Conduit:
 1. Use for short runs to equipment such as interlock, limit switch or other item requiring adjustment (dry location).

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2. Use one to two feet of flexible metal conduit for final connection to equipment subject to vibration (dry location).
- c. Liquid-tight Flexible Metal Conduit:
 1. Use for short run to equipment such as interlock, limit switch or other item requiring adjustment (damp and wet location).
 2. Use for one to two foot of Liquid-tight flexible metal conduit for final conduit connection to equipment subject to vibration (damp and wet location).
- B. Wire-way:
 1. Conductor Installation:
 2. Wiring can be installed in raceway for:
 - a. Traveling cable connecting the car and hoistway wiring.
 - b. As permitted otherwise by the exception to National Electric Code Article 620-21.
 - c. Elevator control wiring in the machine room.
 3. Traveling Cable: Terminate end of traveling cable in NEMA 1" junction box equipped with labeled terminal strip and strain relief device at each connection.
 4. Outlet, Junction and Pull-box Installation:
 - a. Boxes for Concealed Conduit System:
 - b. Install box of depth to suit job condition and also comply with Article 370 of the National Electrical Code.
 - c. Use galvanized steel box with flush cover for junction and pull box.
 5. Box For Exposed Conduit System:
 - a. Use box for the Work with conduit size $\frac{1}{2}$ ", $\frac{3}{4}$ "

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and 1".

- b. Use box for the Work with conduit size over 1" in wet location.
 - c. Use galvanized steel junction and pull box for Work with conduit size over 1" in dry location and damp location.
6. Specific Purpose Outlet Box: Use specific purpose outlet box to mount equipment when available and suitable for job condition.
- a. Supporting Device Installation:
7. Attachment of Conduit System:
- a. Masonry construction: Attach conduit to masonry construction by means of pipe strap or pipe clamp and masonry anchorage device.

END OF SECTION

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SECTION 21 03 01
GENERAL PROVISIONS FOR FIRE PROTECTION SYSTEMS WORK

PART 1 - GENERAL

1.01 SCOPE AND INTERPRETATION

- A. The contract and accompanying Drawings provide for the furnishing and the installation of the fire protection systems, including all accessories such as hose stations and cabinets, sprinkler heads, flow switches, fire/sprinkler booster pumps, etc.
- B. The specifications and Drawings require the Contractor, to provide all labor, materials, equipment and appurtenances to perform of all Work pertaining or incidental thereto, which is needed to complete the Work shown on the Drawings and called for in the Specifications.
- C. The complete fire protection system and the Work shall be so installed as to give proper and continuous service under all conditions, and shall be in accordance with the requirements of all public authorities having jurisdiction and to the complete satisfaction of the Commissioner. Any Work shown on the Drawings and not particularly described in the specifications, or vice versa or any Work which may be deemed necessary to complete the Contract shall be provided by Contractor as part of its Contract.
- D. For purposes of clearness and legibility, fire protection Drawings are essentially diagrammatic and size and location of equipment are drawn to scale wherever possible. The Drawings indicate size, connection points and routes of pipe. It is not intended, however, that all offsets, rises and drops are shown. Provide piping as required to fit structure, avoid obstruction, and retain clearances, headroom openings and passageways.
- E. Sprinklers shown and described on the Drawings shall be connected to water supply piping in accordance with the requirements of NFPA 13-02, Standard for the Installation of Sprinkler Systems as amended Section Q101 of Appendix Q of the 2008 NYC Building Code, despite any possible omission of indication of such piping on the plans. Any question involving the installation of such piping shall be referred to the Commissioner for resolution.
- F. Fire protection systems shall be tested in accordance with the NYC Building Code and the NYC Fire Code.
- G. Installation of sprinkler systems are subject to the special inspection requirements of Chapter 9 of the NYC Building Code.

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The Contractor shall cooperate and provide access to Special Inspectors hired by the City of New York for conducting Special Inspections.

H. Scope of Work: The fire protection work of the contract shall include but shall not be limited to the following systems, equipment and services:

1. Provide a complete combined fire protection system consisting of:
 - a. Sprinkler risers and riser control valves, distribution and branch piping, drain lines, Siamese fire department connection, and all associated appurtenances and alarm devices.
2. Piping: Installation of complete sprinkler systems piping from the point of connection at a flanged fitting at the water source piping installed by the contractor. Piping includes among other things: Siamese connection and fittings, O.S & Y valves, control valves, flow switches, floor control valve assembly, drainage piping, sprinkler heads, hose station and cabinets etc.
3. Equipment and devices furnished under other Sections of the contract that are integrated with the fire protection system, including electrical devices for system monitoring and alarms, shall be piped by the contractor.
4. All valves controlling the water supply for automatic sprinkler systems and water-flow switches on all sprinkler systems shall be electrically supervised by the fire alarm system.
5. Floor Control Valves: For a sprinkler system, an approved, supervised, indicating control valves assembly shall be provided at the point of connection to the riser on each floor.
6. Testing of the sprinkler system shall be as per the provisions of Section 211313, paragraph 3.02.
7. Painting requirements for dedicated piping of sprinkler system shall be as per Section 211313.
8. Piping, Equipment Supports, and seismic bracing: To comprise all restraints, hangers, pipe guides, rods, beam clamps, brackets, pipe anchors, other attachments, floor flanges, masonry anchors, bolts, nuts, washers, and other items as required to fully support all piping and equipments installed under the contract. Provide spring hangers, seismic restraints,

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and vibration mounts where recommended by equipment manufacturers, where required to meet noise abatement regulations and as necessary to prevent piping and equipment vibrations being transmitted to structure.

9. Instrumentation: Provide thermometers, pressure gauges and other items for all piping and equipment installed under the contract, as indicated on contract drawings and as necessary for operation, maintenance and adjustments.
10. Miscellaneous Work: Included shall be all items of materials, piping, controls, wiring and other miscellaneous items not specifically shown on Contract Drawings or called for herein but which are normally furnished and required for a complete installation of this type.
11. Sealing of Openings: Openings left in walls, floors, ceilings or partitions shall be sealed. Finish shall match existing adjoining finish in all respects.

1.02 CODES AND STANDARDS

- A. It shall be unlawful for any person to perform the work referred to under this Fire Protection Specifications and/or shown on the Fire Protection Contract Drawings unless such person is a licensed master fire suppression piping contractor, as permitted by the NYC Building Code and unless such work is performed under the direct and continuing supervision of a licensed master fire suppression piping contractor.
- B. Where requirements for products, materials, systems, equipment, methods and other portion of the work specified herein exceed minimum requirements of regulatory agencies having jurisdiction over the construction work, contractor shall comply with such requirements specified herein, unless specifically approved otherwise by the Commissioner.

1.03 TORCH BURNING OPERATION

- A. The storing and use of oxygen and combustible gases in conjunction with torch burning apparatus is subject to the Rules and Regulations of the Division of Fire Prevention of the Fire Department of the City of New York, latest Fire Prevention (F.P.) Directive. Fire watches shall be provided during all operations using torches for burning, cutting or welding.
- B. Contractor shall apply for and obtain permits for the use and storage of such equipment on school premises. The operator of such equipment shall have a certificate of fitness issued by the Fire Department.

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- C. The cost of permits, certificates, fire watches, apparatus and other items required in the torch burning operation shall be borne by Contractor at no additional cost to the Commissioner.

1.04 PROTECTION OF MATERIALS AND WORK

A. New Building

1. Open ends of piping shall be temporarily closed by a proper fitting, until piping is approved and ready for service.
2. Motors and appurtenances shall be covered and protected during the progress of the Work.

1.05 GUARANTEES AND WARRANTIES

- A. Contractor's Guarantees: Contractor guarantees that all Work of the contract is free from all defects, and is as specified, and that should any defects, which cannot be proven to have been caused by improper use, develop within the space of one year from the date of substantial completion of the Work, such defects shall be made good by Contractor, free of cost to the City of New York.

1.06 OPENINGS AND CHASES

- A. Openings through exterior foundation walls shall be made watertight by the Contractor after pipes, conduits and other items passing through the wall have been installed. This building is planned and detailed, and is the intent of these specifications to provide a structure that will prevent the penetration by rodents and vermin of any vacant space where they might find a harborage. Contractor will be held responsible for securing this condition by the closing of all points of access to such spaces, including the passage of piping and conduits, through all walls, partitions, ceilings and furred out spaces, the closing of access to voids in hollow tile or cinder blocks. There shall be a special inspection of the building with regard to this matter before final acceptance.

1.07 INSTRUCTION OF FACILITY MANAGER

- A. After the fire protection system has been tested, and all other items adjusted and operating properly to the satisfaction of the Commissioner, Contractor shall furnish a competent person to instruct the staff in the operation and maintenance of the systems. Contractor shall video record all the training sessions for various equipment and systems as specified in individual sections of these Specifications. Determination of the date and time of such instruction shall be under the direction of the Commissioner.

1.08 CLEANING AND REPAIR

- A. At the completion of the Work and before the final inspection is made the Contractor shall thoroughly flush the system and leave it free from all marks, scratches, stains, and other damage. All equipment shall be cleaned and left in condition to operate, and the work, as a whole, left in perfect working order. Remove all tools, debris and excess materials from the premises.
- B. Contractor shall not leave sharp exposed metal edges (bottom of threaded rods, equipment supports, etc.) that could otherwise present safety hazards to the building's occupants/work staff.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 211313
SPRINKLER SYSTEMS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide an automatic sprinkler system as specified herein, as shown on the Drawings and as needed for a complete and proper installation.

1.02 RELATED SECTIONS

- A. Division 21 Sections

1.03 REFERENCES

- A. NFPA 13 - National Fire Protection Association Standard for the Installation of Sprinkler Systems.

1.04 SYSTEM DESCRIPTION

- A. Type of System:
1. Wet System - Pipe Schedule.
- B. Occupancy Classification:
1. Ordinary Hazard Occupancy.

1.05 SUPPLEMENTAL SUBMITTALS

- A. Submit copies of all permits and approved drawings issued by the New York City Building Department.
- B. Shop Drawings
1. Complete sprinkler system layout indicating the locations of sprinkler heads, devices, and accessories. Include separate details of special or not easily visualized piping arrangements and inspector's test valves and connections.
 2. Wiring Diagrams: Power, signal, and control wiring. Differentiate between manufacturer-installed and field-installed wiring.
- C. Test Reports as specified in the Field Quality Control Article.
- D. Certification of Installation: Submit certificate upon completion of sprinkler work, which indicates that work

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has been tested in accordance with The New York City Building Department, NFPA 13, and also that system is operational, complete and has no defects.

- E. Maintenance data: Include an instruction manual describing the operation and maintenance of the system in the maintenance manual.
- F. Maintenance materials: Sprinkler heads, steel cabinet, wrench, caps and chains

1.06 SUPPLEMENTAL QUALITY ASSURANCE

- A. Codes and Standards
 - 1. NFPA Compliance: Install fire protection systems in accordance with NFPA 13: Standard for the Installation of Sprinkler Systems.
 - 2. UL Compliance: Provide sprinkler products in accordance with UL standards; provide UL label on each product.
 - 3. New York City Building Code: Comply with the requirements of The New York City Building Code and with the Rules and Regulations of the Building Department, The Division of Fire Prevention of the Fire Department and all other public authorities having jurisdiction.
 - 4. Fire Department/Marshal Compliance: Install sprinkler systems in accordance with local regulations of Fire Department or Fire Marshal.
- B. Qualifications: The persons employed to perform the Work of this Section and their supervisor shall be personally experienced in sprinkler work while in the employ of a company or companies engaged in the installation of sprinkler systems.
- C. Regulatory Requirements:
 - 1. Materials for the Work of this Section shall be Underwriter's Laboratories listed, and/or Factory Mutual approved.
- D. Certification: NFPA Contractor's Material and Test Certificate.

1.07 EXTRA MATERIALS

- A. Heads: For each style and temperature range required, furnish additional sprinkler heads, amounting to six heads when fewer than 300 heads are installed and twelve

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heads when between 300 and 1200 heads are installed. All the spare heads will be enclosed in a steel cabinet with a special sprinkler wrench to be delivered to the City of New York. Obtain a receipt.

PART 2 - PRODUCTS

2.01 PIPING

A. General:

1. Provide piping materials and factory fabricated piping products of sizes, types, pressure and temperature ratings, and capacities as indicated on the Drawings.
2. Provide fittings of materials that match pipe materials used in the sprinkler systems.

B. Identification: Provide identification complying with Section 22 05 53: Piping Identification in accordance with the following listing:

1. Fire Protection Piping: Plastic pipe markers.
2. Fire Protection Valves: Plastic valve tags.
3. Fire Protection Signs: Provide the following signs:
 - a. At each sprinkler valve, sign indicating what portion of system valve controls.
 - b. At each outside alarm device, sign indicating whom to call if device is activated.

C. Piping: All sprinkler piping shall be UL Listed and FM approved. Provide pipes, fittings, specialties, supports and anchors as shown on the Drawings, and in accordance with the following:

1. Black Steel Pipe: Schedule 40 Class 125, cast-iron threaded fittings, threaded joints; grooved pipe, mechanical coupling type fittings as noted below.
 - a. Steel Pipe for Threading: Standard weight, Schedule 40, Type F, E or S, black; ASTM A53, ASTM A135 or A106.
2. Adjustable steel clevis hangers, adjustable steel band hangers or adjustable band hangers for horizontal-piping hangers and supports.

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- a. Two-bolt riser clamps for vertical piping supports.
- b. Steel turnbuckles and malleable iron sockets for hanger-rod attachments.
- c. Concrete inserts, top-beam C-clamps, side beam or channel clamps or center beam clamps for building attachments. C-type clamps used to attach hangers to the building structure in areas subject to earthquakes shall be equipped with a retaining strap or safety hook to prevent movement. See Figure 7-7 of ASHRAE Practical Guide to Seismic Restraint, 1999. C-type clamps, with or without retaining straps, shall not be used to attach braces to the building structure.

The seismic bracing of sprinkler piping is governed by Article 3-5.3 of ANSI/NFPA No.13, Standard for the Installation of Sprinkler Systems-1989 as modified by Reference Standard RS 17-2 of the Building Code of the City of New York. Reference Section 21 05 48, Vibration and Seismic Controls for Fire-Suppression Piping and Equipment.

2.02 VALVES AND ACCESSORIES

- A. Valves: Provide valves shown on the Drawings and needed for a proper installation.
 1. Gate Valves (175 psig non-shock working pressure):
 - a. 3/4 inch to 2 inch: Bronze body, OS & Y indicating type; double or wedge disc with threaded ends.
 - b. 2-1/2 inch and larger: IBBM, OS & Y indicating type; double or wedge disc with end connections as required to suit the piping system.
 2. Check Valves: IBBM, single clapper swing check with metal to metal or rubber faced checks, suitable for horizontal and vertical installation; end connections as required to suit the piping system; 175 psig non-shock working pressure.
 - a. Ball Drip (where shown on Drawings): Brass, automatic; threaded on both ends.
 3. Inspector's Test Outlet Valve: Ball type, bronze

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body, Type 316 stainless steel ball and stem, Teflon seats and stem packing, 400 psi WOG. Valve shall have padlocking feature in both the open and closed position.

4. Valve Locking Devices:

- a. Chain: 3/16 inch galvanized steel, welded link.
- b. Padlock: Series 800 by Yale, Eaton Corp., Charlotte, NC: Key all locks alike. Furnish 2 keys for each lock.
- c. Key Tags: 1-1/2 inch dia., brass, stamped with valve number and service.
- d. "S" Hooks: Brass, for securing keys to key tags.

B. Special Valves

1. Provide valves, UL listed, in accordance with the following listing. Provide sizes and types that mate and match piping and equipment connections.
 - a. Alarm Check Valve: Provide cast-iron water flow alarm check valve, 175 psi working pressure.
 1. Two piece cast iron body, bolted and gasketed.
 2. Moving parts brass, bronze, or stainless steel with replaceable rubber clapper facing.
 3. Right or left hand trimming as required.
 4. Suitable for horizontal or vertical installation.
 5. Two pressure gages.
 6. Main drain tap.
 7. Alarm retarding chamber for water motor alarm device and electric alarm pressure switch.
 8. Factory finish with corrosion resistant red paint.
 9. Trim Package: Angle valve, globe valve, alarm line strainer, orifice restriction,

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pipe nipples and fittings.

- C. Pressure Gages: Range of 2 times system working pressure at point where installed. Equip with gage cock and provisions for draining.
- D. Inspector's Test Connection: Cast brass, capped, sprinkler line tester fitting; Elkhart Brass Mfg. Co.'s No. 112, or Seco Mfg., Inc.'s No. 445 or 446.

2.03 SPRINKLER HEADS AND APPURTENANCES

- A. Sprinkler Heads: Brass or bronze, with standard 1/2 inch orifice, and deflector:
 - 1. Upright or Pendent Type: Deflector designed to distribute water downward in a uniform hemispherical spray pattern.
 - 2. Flush Pendent Type: All or part of sprinkler body including shank thread mounts above lower plane of finished ceiling.
 - 3. Sidewall Type: Horizontal or vertical sprinklers with special deflectors designed to discharge most of the water away from nearby wall in a pattern resembling 1/4 of a sphere with a small portion of discharge directed at wall behind sprinkler.
 - 4. Markings: Stamp sprinkler type on deflector in addition to NFPA's color code requirements covering temperature classification.
 - 5. Finish for Upright, Pendent and Recess Pendent: chrome plate for occupied areas, cast or plain brass for unoccupied areas.
- B. Approved Manufacturers:
 - Firematic Sprinkler Devices, Inc.
 - Anvil International / Anvil Star
 - Viking Corp.
 - Reliable Automatic Sprinkler Co.
 - Victaulic Co. of America.
- C. Sprinkler Guards For Exposed Piping: Welded steel wire cage with cast or pressed steel base plate and suitable retaining clamps.
 - 1. Finish: Paint to match sprinkler piping.

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2.04 WATER FLOW ALARM DEVICE

- A. Vane Type Waterflow Switch: Autocall Div., Federal Signal Corp.'s 4160, Potter Electric Signal Co.'s VSR-F, or Reliable's Model A., having:
1. Corrosion-resistant vane.
 2. Splash/dust resistant enclosure with anti-tamper switch.
 3. Adjustable pneumatic retard.
 4. Screw type wiring terminals.
 5. Switch rated minimum 7.0 amps at 125 V ac and 0.25 amps at 125 V dc.

2.05 VALVE SUPERVISORY SWITCHES

- A. Mechanically actuated, designed to close contacts and sound an alarm when supervised valve is closed and when switch cover removed.
1. For Gate Valves: Potter Electric Signal Co.'s OSYSU-A, or Grinnell's F640.

PART 3 - EXECUTION

3.01 SUPPLEMENTAL INSTALLATION

- A. Approval of Sprinkler System: All necessary permits for work in connection with the installation of the sprinkler system shall be obtained by the Contractor before commencing any of the sprinkler work. The City of New York will prepare and submit plans to the Building Department and obtain approval of the sprinkler system.
- B. Installation of Identification
1. Install fire protection signs on sprinkler system in accordance with NYC Building Code, NFPA 13 requirements.
 2. Each valve in the sprinkler system shall be tagged in accordance with the requirements of The New York City Building Code and The Board of Standards and Appeals.
- C. Piping Installation

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1. Comply with requirements of NFPA 13 for installation of sprinkler piping materials. Install piping products where indicated, in accordance with manufacturer's written instructions and in accordance with recognized industry practices to ensure that piping systems comply with requirements and serve intended purposes.
2. Coordinate with other work including plumbing piping, as necessary to interface components of sprinkler piping properly with other work.
3. Install drain piping at low points of piping systems and at the alarm valve, a valve drain connection that will be carried down to the floor to discharge into the nearest floor drain, unless otherwise shown on the Drawings. Low points of sprinkler piping that cannot be drained through the alarm valve drain or when there is no alarm valve, shall also be provided with drains as may be shown on the Drawings or as required.
4. Install valved hose connections of sizes indicated, or 3/4" size if not otherwise indicated, on sprinkler at ends of branch lines and cross mains at locations where indicated on the Drawings.
5. Install Inspector's test connection where indicated, or at most remote point from riser.

D. Installation of Valves

1. Install alarm valves and water flow detectors where indicated on the Drawings.
2. Valves shall have built-in tamper switches for use in applications where supervision of the open position of the valve may be desired. The tamper switch is operated by a cam connected to the valve stem. The Contractor should make certain that the valve disc when fully open does not interfere with the operation of other system components immediately adjacent to the valve.

E. Installation of Electrical Devices: Provide wiring requirements for electrical wiring of control panel, bells, valves, tamper switch, alarm valves, and water flow detectors.

F. Installation of Sprinkler Head

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1. Install sprinkler head at the proper position shown on the Drawings, or as required. Install concealed type sprinkler heads with factory painted white cover plate in areas with suspended ceilings. Install recessed type sprinkler head with manufacturer supply escutcheon.
2. Install sprinkler piping, heads, and all other items and accessories to clear electric lighting fixtures.

3.02 FIELD QUALITY CONTROL/INTERDISCIPLINARY TESTS AND FUNCTIONAL PERFORMANCE TESTS

A. Sprinkler Piping Flushing

Prior to connecting sprinkler risers for flushing, flush water feed mains, lead-in connections and control portions of sprinkler piping. After fire sprinkler piping installation has been completed and before piping is placed in service, flush entire sprinkler system, as required to remove foreign substances, under pressure as specified in NFPA 13. Continue flushing until water is clear, and check to ensure that debris has not clogged sprinkler heads.

B. Test

1. Hydrostatic Testing: After flushing system, test fire sprinkler piping hydrostatically, for period of 1 hour, at not less than 200 psi at the lowest cross connection to the siamese connection and at a pressure of not less than 100 psi at the top most sprinkler head. Check system for leakage of joints. Measure hydrostatic pressure at low point of each system or zone being tested.
2. Repair or replace piping system as required to eliminate leakage in accordance with NFPA standards for "little or no leakage" and retest as specified to demonstrate compliance.
3. Test the entire sprinkler installation, including sprinkler alarm system, in accordance with the requirements of the Building Code and give at least 2 days advance notice in writing of tests and inspections to the Commissioner. Tests shall be conducted in the presence of the Commissioner, Fire Department and any other public authority having jurisdiction. All tests shall be performed as part of this contract.

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**C. Interdisciplinary Pre-Start-Up and Start-Up Tests/
Inspections:**

The Contractor shall conduct interdisciplinary pre-start up and start up tests/inspections (ex. verifying correct seismic restraint installations, verifying correct installation of sprinkler flow detectors and alarm gong) as per the manufacturer's start up procedures. Contractor shall submit signed start up affidavit signed by the factory authorized service representative/Contractor's seismic P.E. certification indicating that all of the manufacturer's pre-start up and start up procedures have been successfully completed.

D. Functional Performance Tests:

Contractor shall also submit signed functional performance testing affidavit signed by the factory authorized service representative indicating that all of the manufacturer's functional performance tests (flushing, hydrostatic tests and testing of the sprinkler alarm system activation) have been successfully completed.

END OF SECTION

SECTION 22 04 01
GENERAL PROVISIONS FOR PLUMBING WORK

1.01 SCOPE AND INTERPRETATION

- A. These Specifications and accompanying Drawings provide for the furnishing, setting and connection of sanitary fixtures, the installation of drainage and water supply systems.
- B. The specifications and Drawings require the Contractor to provide all labor, materials, equipment and appliances to perform of all Work pertaining or incidental thereto, which is needed to complete the Work shown on the Drawings and called for in the Specifications.
- C. The complete systems and the Work shall be so installed as to give proper and continuous service under all conditions, and shall be in accordance with the requirements of all public authorities having jurisdiction and to the complete satisfaction of the Commissioner. Any Work shown on the Drawings and not particularly described in the specifications, or vice versa or any Work which may be deemed necessary to complete the Contract shall be provided by the Contractor as part of its Contract.
- D. For purposes of clearness and legibility, plumbing Drawings are essentially diagrammatic and size and location of equipment are drawn to scale wherever possible. The Drawings indicate size, connection points and routes of pipe. It is not intended, however, that all offsets, rises and drops are shown. Provide piping as required to fit structure, avoid obstruction, and retain clearances, headroom openings and passageways.
- E. Fixtures shown and described on the Drawings shall be connected with waste, vent and water supply piping in accordance with the requirements of New-York City Building Code, despite the omission of indication of such piping on the plans. Any question involving the installation of such piping shall be referred to the Commissioner for resolution.
- F. Fixtures, piping and other plumbing items which are shown and described on the Drawings and are not specifically labeled "Future" or "N.I.C." shall be provided by the Contractor. Related Work necessary for the proper installation shall be performed by the Contractor.
- G. Scope of Work: The plumbing and drainage work of the contract shall include but shall not be limited to the following systems, equipment and services:
 - 1. Cold Water Service Piping: (Main domestic service): Complete piping system including O. S. & Y. valve,

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check valves, water service meter assembly and an approved backflow preventer device.

2. Fire Service Piping: Complete piping system including curb valve and box & signs from connection to city water main and ending within building with a service header consisting of O.S. &Y. valve, check valve, connection to domestic water service, and a fire service double detector check valve assembly.

Note: If the two (2) water services are fed from one street main, a sectional valve should be installed per DEP requirements and approvals.

3. Fire Service Double Detector Check Valve Assembly: Complete with approved double detector check valve, strainer, valves, pipe and fittings.
4. Piping, Equipment Supports, and seismic restraints: To comprise all restraints, hangers, pipe guides, rods, beam clamps, brackets, pipe anchors, other attachments, floor flanges, masonry anchors, bolts, nuts, washers, and other items as required to fully support all piping, and equipment installed under the contract inclusive of spring hangers, seismic restraints, and vibration mounts where recommended by equipment manufacturers, where required to meet noise abatement regulations and as necessary to prevent piping and equipment vibrations being transmitted to structure.
6. Provide unions and stop valves at all equipment connections and where required for service, repairs and draining.
7. Piping - General: Piping, Piping installation or hook-up shall mean a complete installation in all respects including pipe, fittings, valves, unions, traps, strainers, specialties and other miscellaneous items to make piping systems and equipment operational.
8. Instrumentation: Provide thermometers, pressure gauges and other items for all piping and equipment installed under the contract, as indicated on contract drawings and as necessary for operation, maintenance and adjustments.
9. Insulation, Painting and Identification: As specified in their respective sections of the contract.
10. Miscellaneous Work: Included shall be all items of materials, piping, controls, wiring and other miscellaneous items not specifically shown on Contract Drawings or called for herein but which are normally furnished and required for a complete installation of this type.

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11. Tests: The Contractor shall perform pressure, performance and operating tests and other tests as hereinafter specified, as directed by the Commissioner and as required by agencies having jurisdiction as specified in Section 220800 "Cleaning and Testing".
12. Sealing of Openings: Openings left in walls, floors, ceilings or partitions shall be sealed. Finish shall match existing adjoining finish in all respects.

1.02 CODES AND STANDARDS

- A. It shall be unlawful for any person to perform the work referred to under this Plumbing and Drainage Specifications and/or shown on the Plumbing and Drainage Contract Drawings unless such person is a licensed master plumber, partnership, corporation or other business association as permitted by the NYC Building Code and unless such work is performed under the direct and continuing supervision of a licensed master plumber.
- B. Where requirements for products, materials, systems, equipment, methods and other portion of the work specified herein exceed minimum requirements of regulatory agencies having jurisdiction over the construction work, contractor shall comply with such requirements specified herein, unless specifically approved otherwise by the Commissioner.

1.03 TORCH BURNING OPERATION

- A. The storing and use of oxygen and combustible gases in conjunction with torch burning apparatus is subject to the Rules and Regulations of the Division of Fire Prevention of the Fire Department of the City of New York, latest Fire Prevention (F.P.) Directive. Fire watches shall be provided during all operations using torches for burning, cutting or welding.
- B. Contractor shall apply for and obtain permits for the use and storage of such equipment on school premises. The operator of such equipment shall have a certificate of fitness issued by the Fire Department.
- C. The cost of permits, certificates, fire watches, apparatus and other items required in the torch burning operation shall be borne by the Contractor at no additional cost to the Commissioner.

1.04 PROTECTION OF MATERIALS AND WORK

- A. New Building
 1. Open ends of piping shall be temporarily closed by a proper fitting, until piping is approved and ready for service. The use of water closets and other plumbing

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fixtures during the progress of the Work is strictly prohibited.

2. Motors and appurtenances shall be covered and protected during the progress of the Work.

1.05 GUARANTEES AND WARRANTIES

- A. Contractor's Guarantees: The Contractor guarantees that all Work of the contract is free from all defects, and is as specified, and that should any defects, which cannot be proven to have been caused by improper use, develop within the space of one year from the date of substantial completion of the Work, such defects shall be made good by the Contractor, free of cost to the DDC.

1.06 OPENINGS AND CHASES

- A. Openings through exterior foundation walls shall be made watertight by the Contractor after pipes, conduits and other items passing through the wall have been installed. This building is planned and detailed, and is the intent of these specifications to provide a structure that will prevent the penetration by rodents and vermin of any vacant space where they might find a harborage. The Contractor will be held responsible for securing this condition by the closing of all points of access to such spaces, including the passage of piping and conduits, through all walls, partitions, ceilings and furred out spaces, the closing of access to voids in hollow tile or cinder blocks. There shall be a special inspection of the building with regard to this matter before final acceptance.

1.07 INSTRUCTION OF FACILITY MANAGER

- A. After the plumbing, drainage, and gas systems have been tested, and fixtures, apparatus and all other items adjusted and operating properly to the satisfaction of the Commissioner, Contractor shall furnish a competent person to instruct the Facility staff in the operation and maintenance of the systems. Contractor shall video record all the training sessions for various equipment and systems as specified in individual sections of these Specifications. Determination of the date and time of such instruction shall be under the direction of the Commissioner's Representative.

1.08 CLEANING AND REPAIR

- A. At the completion of the Work and before the final inspection is made the Contractor shall thoroughly clean all fixtures, apparatus, appurtenances, piping, brass and chrome and nickel-plated work, marble and stone work, and leave these items free from all marks, scratches, stains,

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and other damage. All pumps, filters, heaters, and other equipment shall be cleaned and left in condition to operate, and the work, as a whole, left in perfect working order. Remove all tools, debris and excess materials from the premises.

- B. Contractor shall not leave sharp exposed metal edges (bottom of threaded rods, P&D equipment supports, etc.) that could otherwise present safety hazards to the building's occupants/work staff.

END OF SECTION

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SECTION 22 04 10
PLUMBING PIPING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Extent of plumbing piping work is indicated on Drawings and by the requirements of this Section including but is not limited to the following:

1. Pipe
2. Fittings
3. Piping Joints
4. Sleeves for Pipes
5. Unions
6. Escutcheon Plates
7. Hose Bibbs

1.02 CODES AND STANDARDS

A. Comply with applicable portions of the Building Code of the City of New York. Where requirements for products, materials, equipment, methods and other portion of the work specified herein exceed minimum requirements of N.Y.City Building Code, contractor shall comply with such requirements specified herein, unless specifically approved otherwise by the Commissioner.

B. Standards listed below are referenced in this section.

1. American Society for Testing and Materials (ASTM)
2. American Standards Association (ASA)
3. American National Standards Institute (ANSI)
4. United States of America Standards Institute (USASI)
5. Cast Iron Soil Pipe Institute (CISPI)
6. American Water Works Association (AWWA)
7. NSF International

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C. Brazing: Certify brazing procedures and brazers.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver pipe materials properly protected, and undamaged.
- B. Properly protect all piping so as to prevent damage to the pipe or the introduction of foreign material into the pipe. For the purpose of protecting piping from pre-installation contamination, all piping shall be shipped to job site with suitable caps, sheet metal covers or plugs. Pipe caps shall not be removed until just before installation.
- C. Examine all pipe and fittings before laying. Do not install any piece that is found to be defective.

1.05 SUBMITTALS

- A. Submit manufacturer's instructions for installation of fire stop materials for sleeves for pipes.
- B. Submit Shop Drawings for all piping installations
- C. Pipe Schedule: Itemize pipe and fitting materials for each specified application.
- D. Brazing Certifications: Submit as required for piping work.
- E. Product Data
 - 1. Escutcheons
 - 2. Pipe & fittings

OR

Submit a compliance affidavit, if pipe and fittings match contract documents. Manufacturer's technical product data submission will be required if a substitution is proposed.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Piping shall conform to the following:
 - 1. Steel Pipe
 - a. Black steel pipe and galvanized steel pipe shall be Grade A, seamless, electric resistance welded pipe, or type F furnace butt-welded, and shall be made in accordance

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with the current Edition of the ASTM A53. Pipe shall be free from scale, and rust, injurious sand marks, blisters, scale pits, laminations, imperfect welds, or other defects that might affect its strength, appearance or ability to resist corrosion. The maker's name shall be rolled or stamped in the metal at intervals of each length of pipe 2" and larger, and stamped on a metal tag secured to each bundle of pipe 1¹/₂" and smaller.

b. Unless otherwise specified or indicated on Drawings, black steel pipe shall be standard weight and galvanized steel pipe shall be Schedule 40 galv. pipe.

c. Available Manufacturers:

U.S. Steel Co.
Sawhill Tubular Co.
North Star Steel
Sharon Tube Co.
Koppel Steel Corp.
Or approved equal.

2. Brass Pipe

a. Seamless drawn red-brass pipe made in accordance with the current edition of ASTM B43 and of an alloy containing not less than eighty-five (85%) copper and not more than 0.05% lead, semi-annealed, regular weight. Pipe to be threaded on both ends with NPT (Taper Pipe Threads) conforming to ANSI B2.1. The maker's name shall be stamped at intervals on each length of pipe and the pipe shall be color-coded White in accordance with The Copper and Brass Research Association standards.

b. Manufacturers for Brass Pipes and Copper Tubings:

Chase Brass & Copper Co.
Phelps Dodge Copper Products Corp.
Revere Copper & Brass Inc.
Or approved equal.

3. Copper Tubing Type "K": Tubing shall be hard drawn seamless tubing manufactured in 20 foot lengths, in accordance with the Copper Development Association and ASTM B88, for below ground use only. Each tube

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shall be identified by means of color bars, green, running full length of each tube.

4. Copper Tubing Type "L": Tubing shall be hard drawn seamless tubing manufactured in 20 foot lengths, in accordance with the Copper Development Association and ASTM B88, for above ground use only. Each tube shall be identified by means of color bars, blue, running full length of each tube.
5. Ductile Iron Pipe
 - a. Ductile iron pipe shall have an outer coating of coal tar and shall comply with the requirements of the latest Standard Specifications of **AWWA C151**.
 - b. Thickness class of pipe shall be as follows:
 - 1) Yard Drainage: thickness class 51 for all sizes
 - 2) House Sewers: thickness class 56 for all sizes
 - 3) Water Service piping: thickness class 52 for three (3) & four (4) inch diameter pipe and thickness class 56 for pipe size greater than four (4) inch.
 - c. Ductile iron pipe shall also comply with the following requirements:
 - 1) Marking: the weight and class and other designated markings required by ANSI specifications shall be stenciled at the foundry on all ductile iron pipe, fittings and specials.

Markings shall be painted conspicuously in white on the outside of each pipe length, fitting and special casting after the shop coat has hardened.
 - 2) Cement Lining: Pipe to be cement lined, except when used in association with sewer piping, in accordance with **AWWA C104** with thickness of lining to be 1/8" minimum. A plus tolerance of 1/8" shall be permitted on all sizes of pipe.
 - d. Manufacturers:

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1. U.S. Pipe and Foundry
2. American Cast Iron Foundry
3. Amstead Industries
4. Or approved equal.

B. Fittings And Joints

1. Fittings And Joints for Ductile Iron Pipe

- a. Jointing for water carrying pipe shall be mechanical type consisting of bell end with cast flange, cast iron gland, rubber gasket and necessary bolts and nuts. Mechanical joints shall conform to AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern and gaskets to AWWA C111. Bolts shall be high-strength, low-alloy steel with minimum 45,000 psi yield strength and comply with AWWA C111. Unless otherwise specified, gasket material shall be rubber.
- b. Push-on joints shall conform to AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern and gaskets to AWWA C111. Push-on joints shall also be restrained using Field- Flange 350 fitting and Field-Lok 350 gasket assembly as manufactured by U.S. Pipe or other approved equal. Unless otherwise specified, gasket material shall be rubber. Push-on Joints shall be Bell-Tite Joint of Griffin Pipe Product Co. or Tyton Joint of U.S. Pipe and Foundry or Fastite Joint of American Cast Iron Pipe Company.
- c. Fittings, joints and accessories for ductile iron shall comply with the requirements of the latest Standard Specifications of ANSI A21.10 and ANSI A21.11. Fittings for mechanical or push-on joints shall be similar to Tyton Joint by U.S. Pipe or Bell-Tite by Griffin Pipe, NACIP, Inc., or approved equal.

2. Fittings for Galvanized Pipe:

Fittings and couplings shall be galvanized cast-iron, recessed and threaded drainage fittings conforming to ASTM A126, Class B, with smooth interior waterway and with threads tapered so as to give a uniform grade to branches of not less than 1/4" to the foot and keep the vertical lines plumb. Fittings for screwed vent piping shall be malleable iron recessed and threaded drainage fittings.

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3. Fittings for brass water supply piping shall be cast bronze threaded fittings, Class 125 working steam pressure, conforming to ANSI B16.15. They shall be made of cast bronze containing not less than eighty-five percent (85%) copper and five percent (5%) each of lead, tin and zinc. All connecting threads of pipes and fittings shall be NPT conforming to the requirements of ANSI B2.1. Exposed fittings for fixture connections shall be rough, plain, polished or chromium plated as specified.
4. Fittings for Type "K" copper tubing shall be cast bronze solder joint fittings suitable for soft-soldering and shall be in accordance with ANSI Std. B16.18-1973. Fittings for Type "L" copper tubing shall be wrought copper solder joint fittings suitable for soft-soldering and shall be in accordance with ANSI B16.22-1973. Type "K" and Type "L" fittings shall have a minimum working water pressure of 150 p.s.i. and shall be as manufactured by Nibco Inc., Stanley G. Flagg & Co., Smith-Cooper International, or approved equal.

Solder shall be lead-free solder as per ASTM B-32

C. Water service pipe, water distribution pipe and all pipe fittings utilized in water supply systems shall conform to NSF 61

D. Pipe Nipples

1. All pipe nipples shall be of the same materials as the connecting piping.
2. The use of close nipples is prohibited

E. Unions

1. Unions 2" and smaller shall be threaded. Unions 2¹/₂" and larger shall be flanged.
2. Threaded unions on copper or brass pipe shall be brass, ground joint suitable for 300 pounds W.S.P.
3. Threaded unions on steel pipe, unless otherwise specified, shall be of malleable iron with bronze ground seats suitable for 300 pounds W.S.P.
4. Flanged unions shall be cast iron for steel pipe, and brass for copper or brass pipe, gasket type suitable for 150 pounds W.S.P.

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5. Flanged unions shall be provided with the necessary steel bolts, nuts and gaskets.
6. All unions used on galvanized piping shall be galvanized.
7. All unions used on chromium plated piping shall be chromium plated.
8. Unions shall be as manufactured by Stanley G. Flagg & Co., Inc., Stockham , Dart or approved equal.

F. Dielectric Fittings/Unions

1. Unions shall be rated at 250 psi at 180° F. and shall meet the requirements of ANSI B16.39. Pipe threads shall be in accordance with ANSI B2.1 and solder ends shall be suitable for brazing.
2. Flange fittings shall have a minimum rating of 175 psi and shall conform to ANSI B16.24 (Bronze), B16.42 (Iron).

3. Manufacturers:

B&K Industries, Inc.
Capitol Mfg. Co.; Division of Harsco Copr.
Eclipse, Inc.
Perfection
Or approved equal.

- G. Gaskets: Gaskets for cold and hot water services shall be full face gaskets. The retaining gasket shall be made of 1175 fabric inserted rubber sheeting and shall be pre-cut at the factory for standard 125 pound cast iron flanges and fittings and for 150 pound raised face steel flanges and fittings.

H. Sleeves for Pipes

1. Sleeves and materials for sealing sleeves for gas piping through exterior walls and floor slabs on earth shall be as specified and approved by the Gas Company.
2. Sheet metal sleeves shall be 20 gauge.
3. Pipe sleeves shall be service weight cast iron pipe or schedule 40 galvanized steel pipe.

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4. Fire stop penetration materials for sealing sleeves shall be listed by Underwriters Laboratories.
5. Material for sealing spaces between pipe and sleeve through foundation walls below grade shall be Link-Seal Type "C" as manufactured by Thunderline Corp; Innerlynx by Advance Products & Systems, Inc.; Pipe Linx by Calpico, Inc., or approved equal. Seals shall be modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill the annular space between the pipe and sleeve. Links shall be loosely assembled with bolts to form a continuous rubber bolt around the pipe with a pressure plate under each bolt head and nut. Link-Seal pressure plates shall be Type "C" (insulating type) to provide for electrical insulation and cathodic protection.
6. Materials for sealing space between each pipe and sleeve through non-fire rated exterior walls above grade shall be Non-shrinking cement
7. Waterproof sleeves shall be Link-Seal Wall Sleeve as manufactured by Thunderline Corp, GPT Industries, or MetraSeal wall sleeve by the Metraflex Co., or approved equal.

PART 3 - EXECUTION

3.01 PIPE AND FITTING SCHEDULE

A. Domestic Cold Water: Above Ground-Interior

1. Type L (blue color bar) copper tubing with wrought copper solder joint fittings suitable for soft soldering; Brass, seamless drawn pipe, regular weight with cast bronze fitting;

B. Domestic Water: Service Underground - Exterior & Interior

1. 2-1/2" and Less: Type K soft annealed copper tube with cast bronze solder joint fittings; Brass, seamless drawn pipe with threaded fittings.
2. 3" and Up: Ductile iron and fittings with mechanical joints

C. Fire Sprinkler: Interior

Black Steel, Standard Weight, with threaded malleable or flanged cast steel fittings. Roll grooved ends, grooved

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pipe fittings and couplings lieu of threaded and/or flanged fitting in sizes 2" and above.

Fire Sprinkler: Underground - Exterior

Ductile iron with mechanical joints coupling. Red brass threaded fitting and piping, including dielectric union, for the final connection to the free standing fire department connection.

3.02 INSTALLATION

A. Piping (General)

1. The run and arrangements of all pipes shall be approximately as shown on drawings or specified and as directed during installation, and shall be as straight and direct as possible, forming right angles or parallel lines with building walls and other pipes, and neatly spaced. No pipe shall be installed where the headroom will be interfered with unless the conditions are such that it is unavoidable and permission is obtained from the Commissioner. Offsets will be permitted where walls reduce in thickness or beams interfere with direct runs; offsets shall be made at an angle of 45° to the vertical; in no case shall the space between the pipes, partitions, walls, etc., exceed 5". All exposed risers shall be erected plumb, standing free, close to and parallel with walls and other pipes and be uniformly spaced. All horizontal runs of piping hung from structural floor, slab or floor beams shall be erected as closely as possible to bottom of floor slabs, ceilings, or I-beams as the case may be. In no case shall the headroom, beneath the pipe, be less than (7'-0") where the pipe is installed more than (1'-0") from wall, partition, etc., except where piping is required to be installed in Boiler Room and Mechanical spaces above floor. Horizontal piping shall be so graded as to drain to the low points and water lines to drain bibbs. All piping installed in floor shall be painted with a heavy coat of asphaltum. All piping shall be installed with ample space for pipe covering. All exposed plumbing piping in the Kitchen Areas shall be chrome plated brass pipe except for gas line. Provide threaded fittings. Chrome (silver) paints will not be accepted.
2. Roughing under ground or concealed in the floor or wall construction shall be properly installed, tested and inspected before any of the roughing is

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covered up. Should any work be covered up before being inspected and tested, it shall be uncovered and recovered at the expense of the Contractor. Plugged fittings shall be installed when called for. Reducer fittings shall be used in making reductions in sizes of pipes; bushings will not be allowed. Suitable air chambers or Water Hammers Arresters shall be provided as called for in other sections.

3. All lines of piping and branches for fixtures passing through or in connection with waterproofing shall be brought to the proper locations and levels so that fixtures and piping may be installed without disturbing the waterproofing.
4. For work in existing buildings the following addition requirements shall be adhered to:
 - a. Piping shall run as straight as possible with the fewest number of changes in direction, with such variations from the layout shown on the Drawings as conditions at the premises may require, as approved by the Commissioner at no extra cost to the Commissioner. Provide piping without sharp bends, quick changes of sections, pockets or bushings.
 - b. The locations of all existing piping which are indicated on the Drawings are approximate. The Contractor shall investigate and ascertain the exact locations of such piping and make whatever minor variations in runs of new piping that may be required at no extra cost to the Commissioner.
 - c. Contractor shall consider the location of all equipment, ductwork, piping, electric conduits, supports, steel work, etc., and all new piping shall be installed without interference therewith.
 - d. Wherever existing branch piping interfere with installation of new branch piping, the existing branch piping shall be removed and re-routed to accommodate the new work. The rerouted work shall be of new material.
 - e. All new extensions and relocations of existing piping systems shall be concealed in existing or new walls, floors, ceilings, pipe chases or as otherwise specified.

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- f. Unused dead ended soil, waste and vent piping shall be removed as far as each branch, main, stack, etc., and capped or plugged concealed in hung ceilings, below floors or behind walls.
- g. All individual hot and cold water branches to and from new and existing mains or risers shall be valved.

B. Piping Joints

1. Joints in Ductile Iron Pipe:

- a. Mechanical Joints: Assemble mechanical joints in accordance with Method of Installation, AWWA C111, Appendix A. Tighten all bolts by means of torque wrenches such that the follower is brought up evenly. Disassemble, clean and reassemble joint if effective sealing is not obtained at specified torques.
- b. Joints for ductile iron mechanical joint pipe shall be made by using ductile iron mechanical joint retainer glands.

2. The joints of steel and brass piping shall be screwed joints of full length and threads shall be NPT conforming to the requirements of ANSI B 2.1. All pipes shall be screwed close up to their shoulders. The use of lamp wick is prohibited in threaded joints. All burrs shall be removed. Pipe joint cement or Teflon tape shall be used only on male threads.

3. Joints in type "L" copper tubing and type "K" copper tubing shall be soft-soldered joint. All surplus flux shall be wiped off immediately after completion of the soldering.

4. Unions shall be used to connect equipment (pumps, circulators, tanks, meters, etc.) to water lines. The union shall be installed as close to the equipment as practical. Where valves are adjacent to equipment, union shall be on down stream side of valves.

12. Dielectric fittings and unions shall be installed where ferrous piping joins copper tubing or brass piping.

C. Sleeves for Pipes

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1. General: All plumbing pipes passing through floors, roofs, walls, partitions, furring, beams, trenches, and wherever else indicated on drawings shall be provided with sleeves installed and maintained by the Contractor. Core drilled holes shall be provided with sleeves. Where plumbing pipes pass through potentially wet floors that do not have membrane waterproofing such as toilet rooms, cafeteria kitchens, serving areas, dish washing room, janitor's sink closet, mechanical equipment rooms, pipe chases and areas that are provided with fire protection sprinkler systems, the Contractor shall install sleeves of galvanized steel pipe with welded clips or equivalent at bottom ends for securing sleeves to form work and shall project one inch above finished floors, and shall be caulked watertight.
 2. For interior walls and floors and for pipes through roof, the space between each installed pipe and its sleeve shall be sealed with a three hour rated fire stop penetration material. Fire stop materials shall be installed in accordance with the instructions of the manufacturer. Cast-in firestop device with Underwriters Laboratories listing and Material and Equipment Acceptance (MEA) approval is permitted as an acceptable sleeve alternative to a metallic sleeve with fire rated sealing caulk. The cast-in device is a one-step fire stopping process that shall not require additional fire stop penetration materials for sealing the sleeves. The device shall be installed where required for sleeving purposes.
 5. Pipe Sleeve: Install pipe sleeves for pipes passing through roofs, concrete beams, brick walls, foundation walls and floor slabs on earth. Sleeves shall be installed with 1/2" maximum clearance all around pipe and shall finish flush with the surfaces penetrated. Pipe sleeves for pipes through roof shall be made of service weight cast iron only.
 6. Sleeves through foundation walls below grade shall be provided under General Construction Work.
- D. Drain Bibbs: Provide drain bibbs in the following locations:
1. At the base of all water risers.
 2. At low points of water lines.

END OF SECTION

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SECTION 220424
BACKFLOW PREVENTERS

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. 22 04 10 Plumbing Piping
- B. 22 05 29 Pipe Hangers and Supports

1.02 SUBMITTALS

- A. Product Data:
 - 1. Manufacturer's catalog sheets, specifications, and installation instructions for each type backflow preventer and test kit.

1.03 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Comply with the State Department of Health Sanitary Code for Cross Connection Control, and the other standards listed in Part 2 of this section.
 - 2. Where conflicts occur between the referenced standards, the most stringent requirements shall apply.

1.04 MAINTENANCE

- A. Special Tools (as furnished or recommended by the backflow preventer manufacturer). Deliver to the Commissioner Representative:
 - 1. Test Kit B: Sight tube, of required length, for testing backflow preventer for proper operation, and printed procedure for conducting test.

PART 2 PRODUCTS

2.01 BACKFLOW PREVENTERS

- A. Double Check Valve device, conforming to ASSE Standard 1015, AWWA C-510, USC specifications manual for Cross Connection control, and listed as acceptable in the New York City Department of Environmental Protection (DEP) guidelines.

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1. Performance: 175 psig, and 130 degrees F, maximum working conditions.
 2. Assembly: gate valve on inlet side, gate valve on outlet side, and four test cocks, all as furnished or recommended by the backflow preventer manufacturer.
 3. Fire service shall be a double check detector assembly.
- B. Reduce Pressure Zone (RPZ) assembly on boiler make up water pipe.
- WATTS, Model 909M1QT-S (Base of Design)
- C. Manufacturers:
Other Manufacturers: AMES, FEBCO, Wilkins. Models shall be approved by NYC DEP.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install the Work of this section in accordance with the manufacturers and NYC DEP printed installation instructions and approved construction drawings.

3.02 FIELD QUALITY CONTROL

- A. Operation Test: Test kit as specified under Part 1 of this section may be used. Conduct test in the presence of the DDC Representative.
1. Type B Backflow Preventer: Test the device with the test kit in accordance with the manufacturer's test procedure.
- B. Re-testing: Repair or replace any device failing the operation test, and repeat the test.

END OF SECTION

SECTION 220523
VALVES

PART 1 GENERAL

1.01 ABBREVIATIONS

- A. IBBM: Iron body, bronze mounted.
- B. OS&Y: Outside screw and yoke.
- C. WOG: Water, oil, gas.
- D. WSP: Working steam pressure.

1.02 SUBMITTALS

- A. Product Data: Manufacturer's catalog sheets and specifications for each valve type.
- B. Valve Schedule: List type of valve, manufacturer's model number, and size for each service application.

1.03 MAINTENANCE

- A. Special Tools:
 - 1. One wrench for each type and size wrench operated plug valve.

PART 2 PRODUCTS

2.01 VALVES - GENERAL

- A. Valve Standardization: Valves from one or more manufacturers may be used, however valves supplied for each specific valve type shall be the product of one manufacturer.
- B. Valves shall be first quality, free from all imperfections and defects, with body markings indicating manufacturer and rating.
- C. Valve parts of same manufacturer, size and type shall be interchangeable.
- D. Manually operated gate, globe and angle valves shall be of rising stem type, unless otherwise specified.
- E. Valves which use packing, shall be capable of being packed when wide open and under full working pressure.

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- F. Size valves the same size as the piping in which they are installed, unless specified otherwise.

2.02 GATE VALVES

- A. Type A: 125 psig WSP, 200 psig WOG, bronze body, union bonnet, solid wedge disc, and threaded ends. Acceptable Valves: Crane 428UB, Hammond IB617, Jenkins 47CU, Milwaukee 1152, Nibco T13, and Stockham B105.
- B. Type C: 125 psig WSP, 200 psig WOG up to 12 inch size, and 150 psig WOG for 14 inch and 16 inch sizes; IBBM OS&Y, bolted bonnet, solid wedge disc, and threaded or flanged ends depending on size. Acceptable Valves: Crane 464-1/2, 465-1/2, Hammond IR1140, Milwaukee F2885, Nibco T6170 & F6170, and Stockham G620 & G623
- C. Type D: 125 psig WSP, 200 psig WOG, bronze body, threaded bonnet, solid wedge disc, and solder ends. Acceptable Valves: Crane 1330, Hammond IB635, Jenkins 991AJ, Milwaukee 149, Nibco S111, and Stockham B108.

2.03 GLOBE AND ANGLE VALVES

- A. Type J: 125 WSP, 200 psig WOG, bronze body, threaded bonnet, and threaded ends. Acceptable Valves: Crane 1, Hammond IB440 & IB463, Jenkins 101J, Milwaukee 502, Nibco T211 & T311, and Stockham B16.
- B. Type K: 125 psig WSP, 200 psig WOG, IBBM OS&Y, bolted bonnet, and threaded or flanged ends depending on size. Acceptable Valves: Crane 351 353, Hammond IR116, Jenkins 613C & 615C, Milwaukee F2981, Nibco F718B & F818B, and Stockham G512, & G515.
- C. Type O: 125 psig, 200 psig WOG, bronze body, threaded bonnet, and solder ends. Acceptable Valves: Crane 1310, Hammond IB423, Jenkins 1200C, Milwaukee 1502, Nibco S21, and Stockham B17.

2.04 CHECK VALVES

- A. Type S: 125 psig WSP, 200 psig WOG, bronze body, brass or bronze trim, horizontal swing, renewable and regrindable disc, and threaded ends. Face discs for cold water service with teflon. Acceptable Valves: Crane 37, Hammond IB940,

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Jenkins 4092, Milwaukee 509, Nibco T413Y, and Stockham B319Y.

- B. Type U: 125 psig WSP, 200 psig WOG, bronze body, brass or bronze trim, horizontal swing, renewable and regrindable disc, and solder ends. Face discs for cold water service with teflon. Acceptable Valves: Crane 1340, Hammond IB912, Jenkins 4093, Milwaukee 1509, Nibco S413Y, and Stockham 309Y.
- C. Type V: 125 psig WSP, 200 psig WOG, IBBM, horizontal swing, bolted bonnet, regrindable and renewable seat ring and disc, and threaded or flanged ends depending on size. Discs on valves 4 inch size and larger may be cast iron with bronze face. Acceptable Valves: Crane 372, & 373, Hammond IR1124, Jenkins 623CJ & 624CJ, Milwaukee F2974, Nibco F918, and Stockham G927 & G931.
- D. Type W:
 - 1. Globe Style Silent Check Valve: IBBM or semi-steel with bronze mounting, renewable seat and disc, 18-8 stainless steel spring, and flanged ends.
 - a. Acceptable Valves (125 psig flange pressure rating): Apco Series 600, Combination Pump & Valve 20D, Hammond IR9354, Milwaukee 1800, Nibco F910, and Williams Hager 636.
 - b. Acceptable Valves (250 psig flange pressure rating): Apco Series 600, Combination Pump & Valve 21D, Milwaukee 1800, Nibco F960, and Williams Hager 636.
 - 2. Wafer Style Silent Check Valve: IBBM or semi-steel with bronze mounting, renewable seat and disc, 18-8 stainless steel spring, and flanged ends.
 - a. Acceptable Valves (125 psig flange pressure rating): Apco Series 300, Combination Pump and Valve 10D, Hammond IR9253, Milwaukee 1400, Nibco W910, and Williams Hager 329 & 375.
 - b. Acceptable Valves (250 psig flange pressure rating): Apco Series 300, Combination Pump and Valve 11D, Milwaukee 1400, Nibco W960, and Williams Hager 329 & 375.

2.05 PLUG VALVES

- A. Type AA: 200 psig WOG, lubricated type with standard port opening, cast iron or semi-steel

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body, sealed lubrication system with lubricant fitting and dial indicator, cylindrical plug or teflon tapered plug, lubricant grooves in body or plug, threaded or flanged ends depending on size, and capable of lubrication with valve under pressure and plug in any position.

1. Acceptable Valves:
 - a. 1/2 inch to 3 inch size: Homestead 611 & 612, , Resun R1430 & R1431, and Rockwell 142 & 143.
 - b. 4 inch size: Homestead 611 & 612, , Resun R1430 & R1431, and Rockwell 142 & 143.
 - c. 5 inch size: Homestead 611 & 612, Resun R1431, Rockwell 143, and Walworth 1797F.
 - d. 6 inch size: Homestead 611 & 612, , Resun R1431, Rockwell 143.
 - e. 8, 10 & 12 inch sizes: Homestead 612G, , Resun R1431WGA, Rockwell 149.
2. Operators:
 - a. 6 inch size and Less: Wrench operator.
 - b. 8 inch size and Up: Worm gear operator.

- B. Type AB: 100 psig WOG, gas cock type with cast iron or bronze body, bronze plug, square head, wrench operator, and threaded ends. Acceptable Manufacturers: Crane, Eclipse Combustion, and McDonald.

2.06 BUTTERFLY VALVES

- A. Type BF: Iron body, flangeless wafer or lugged type, (lug for each bolt hole, drilled and tapped for cap screws), with replaceable reinforced resilient EPT (EPDM) seats, bronze or nickel plated ductile iron discs, phosphate coated steel or stainless steel stems, and raised necks able to accommodate 2 inches of insulation. Acceptable Manufacturers: Crane, Demco, De Zurik, Hammond, Keystone, Milwaukee, Nibco, Stockham, and Watts.
1. Pressure Ratings:
 - a. 12 inch size and Less: 200 psig WOG at 275 degrees F.
 - b. 14 inch size and Up: 150 psig WOG at 275 degrees F.
- B. Operators:
1. 6 inch size and Less: Manual actuator handles with external indication of disc position, and suitable means of locking actuator in any fixed position.
 2. 8 inch size and Up: Worm gear operator.

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2.07 WATER PRESSURE REDUCING VALVES

- A. Main Water Service:
1. Valve shall be an adjustable, direct acting, spring loaded, diaphragm operated, single seat, bottom guided type suitable for dead end service; guaranteed not to stick and shall maintain a constant discharge pressure which will not vary more than 1 psig for each 10 psig decrease in inlet pressure. Valves shall have cast iron, mild steel or bronze bodies, with either flanged ends or screwed ends with unions. Valve trim shall be of stainless steel with renewable composition disc. Parts subject to wear shall be renewable.
 2. Material of diaphragm and disc shall be suitable for an operating temperature to 150 degrees F. The control line, from diaphragm casing, shall be connected to the discharge piping at least 10 feet downstream from pressure reducing valve. Control line shall be of same material as adjoining piping. Valves shall be standard weight for inlet pressures up to 125 psig, and extra heavy weight for inlet pressures in excess of 125 psig.
 3. Acceptable Valves: Fisher Governor Type 655A, Kieley Mueller Type 4250.
- B. Cold Water Make-Up Service:
1. Adjustable direct acting, spring loaded, diaphragm operated, single seat type conforming to ASSE 1003 - Performance Requirements for Water Pressure Reducing Valves for Domestic Water Supply Systems. Acceptable Manufacturers: Bell & Gossett, Watts, and Wilkins.
 - a. Body: Brass or bronze construction.
 - b. Wetted Parts: Brass, bronze, stainless steel, or nickel alloy construction.
 - c. Renewable seat and removable composition disc.
 - d. Integral low inlet pressure check valve.
 - e. Operating Temperature Range: 33-160 degrees F.
 - f. Maximum Working Pressure: 125 psi.
 2. Pressure reducing valves with integral strainers may be substituted for approval, in lieu of separate valve and strainer, if integral strainer and valve meet individual valve and strainer specifications.

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2.08 SAFETY AND RELIEF VALVES

- A. General Requirements: Valves shall be as specified by ASME Code governing manufacture of such valves within scope of their particular usage, i.e., Heating Boilers, Unfired Pressure Valves, etc., shall be tested, rated and listed, unless otherwise specified. Valves for applications specified shall conform to the ASME Code, Section IV, Heating Boilers and the following:
1. Valves for combination domestic hot water heater and storage tanks shall conform to the requirements of ASME Code, Section IV and USA Standard Z21.22 and shall be NBB listed. Valves shall be of the temperature - pressure type. Thermostatic element shall, on rising temperature, cause the valve to open at 200 degrees F. and valve shall deliver its rated capacity at 210 degrees F. and close drip tight at 195 degrees F. Valves shall be sized in accordance with Unfired Vessel Code.
 2. End Connections: Unless otherwise specified, safety valves, relief valves and safety relief valves, in sizes 3/4 inch to 3 inches IPS inclusive, may be furnished with male or female pipe thread inlet and female pipe thread outlet; valves over 3 inches IPS must be furnished with 125 lb. or 250 lb. flanged inlet and may be equipped with female threaded or 125 lb. flanged outlet.

2.09 NEEDLE STOP VALVES

- A. For Temperatures to 300 degrees F.: All brass or forged carbon steel construction, union bonnet, threaded ends, built for 1000 psi at 300 degrees F. Acceptable Manufacturers: Marsh Instrument Co., H.O. Trerice Co., Weksler Instruments Co.

2.10 GAGE COCKS

- A. Gage Cocks: All brass construction, "T" or lever handles, threaded ends, built for 300 psig hydraulic pressure. Acceptable Manufacturers: Marsh Instrument Company, Mueller Instruments Co., H.O. Trerice Co. and Weksler Instruments Corp.

2.11 BALL VALVES

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- A. Type BV: 150 psig WSP, 600 psig WOG, 2 piece bronze body, solid blow-out proof stem, teflon seats, chrome plated brass ball, teflon seals, corrosion resistant steel lever handles with vinyl grips, balancing stop, and threaded or solder ends. Acceptable Manufacturers: Conbraco, Hammond, Milwaukee, Nibco, and Watts.

PART 3 EXECUTION

3.01 INSTALLATION

- A. General: Install valves at locations noted on the drawings or specified.

3.02 VALVE APPLICATION SCHEDULE

- A. Schedule of valve applications for the different services is as follows:
1. Cold Water In Buildings and Tunnels (CW) 125 psig and Less:
 - a. 3 inch and Less: A or D gates or BV balls, O globes or angles, and S or U checks; or C gates, K globes or angles, and V checks, with solder joint companion flanges.
 - b. 4 inch and Up: C gates or BF butterflys, K globes or angles, and V checks.
 2. Domestic Hot Water and Circulating (DHW & DHWC) 125 psig and Less:
 - a. 3 inch and Less: A or D gates or BV balls, J or O globes or angles, and S or U checks.
 - b. 4 inch and Up: C gates or BF butterflys, K globes or angles, and V checks.
 3. Gas - Natural, Manufactured or Mixed Fuel (G) 125 psig and Less:
 - a. 2 inch and Less: AB plug valves.
 - b. 2-1/2 inch and Up: AA plug valves.

END OF SECTION

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SECTION 221119

WATER SUPPLY ACCESSORIES

PART 1 GENERAL

1.01 SUBMITTALS

- A. Product Data: Catalog sheets, specifications, dimensional data, and installation instructions for each item specified, excluding fasteners.

PART 2 PRODUCTS

2.01 WATER HAMMER ARRESTORS

- A. Hydropneumatically controlled with permanently sealed expansion chamber pre-charged with non-combustible gas, threaded connection, and conforming to ASME A112.26.1M - Water Hammer Arrestors, and ASSE 1010 - Water Hammer Arrestors.
 - 1. Bellows Type: Stainless steel construction with elastomer or stainless steel bellows.
 - 2. Piston Type: Hard drawn copper body with brass piston, cap and adapter; and elastomer seals.

2.02 HOSE BIBBS

- A. Compression type with polished chrome plated bronze body, renewable units, vacuum breaker with breakaway screw or vandal resistant fastener (ASSE 1011), removable T-handle, and integral threaded wall flange.
 - 1. Connections: 3/4 inch female threaded inlet, and 3/4 inch hose bibb outlet.

2.04 COMBINATION HOSE BIBBS

- A. Exposed, compression type with chrome plated bronze body, renewable units, bucket hook, wall brace, rigid nozzle, vacuum breaker with breakaway screw or vandal resistant fastener (ASSE 1011), four arm indexed handles, integral stops, and integral threaded wall flanges.
 - 1. Connections: 1/2 inch eccentric threaded inlets on 8 inch centers, and 3/4 inch hose bibb outlet.
 - 2. Spout Length: 10 inches from wall to center of spout outlet.

2.05 DRAIN VALVE

- A. Cast brass body with renewable units, hose bibb vacuum breaker (ASSE 1011) with drainage feature, and removable cast iron handwheel with vandal resistant fastener.
 - 1. Valve must be completely assembled to make hose connection.
 - 2. Connections: 1/2 or 3/4 inch threaded or solder end inlet, and 3/4 inch hose bibb outlet.

2.06 FASTENERS

- A. Vandal Resistant Fasteners: Torx head with center pin.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install the Work of this section in accordance with the manufacturer's printed installation instructions, unless otherwise specified.
- B. Secure external components in place with vandal resistant fasteners or devices which cannot be removed without special tools.

END OF SECTION

SECTION 220529
PIPE HANGERS AND SUPPORTS

PART 1 GENERAL

1.01 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

- A. Companion high density filler pieces for installation over the top 180 degree surface of pipe or tubing, at points of support where a combination clevis hanger, insulation shield and high density insulating saddle are installed.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Piping Insulation: Section 220700.

1.03 SUBMITTALS

- A. Shop Drawings:
1. Details of trapeze hangers and upper hanger attachments for piping 4 inches in diameter and over. Include the number and size of pipe lines to be supported on each type of trapeze hanger.
 2. Details of pipe anchors.
 3. Details and method of installing sway braces for cast iron soil pipe.
 4. Drawings identifying seismic locations with corresponding details of pre-approved seismic restraints, with seismic loads and seismic force level (Fp) calculations; pre-engineered and stamped by a NYS Licensed Professional Engineer experienced in seismic restraint systems.
- B. Product Data: Catalog sheets, specifications and installation instructions for each item specified except fasteners.
- C. Quality Control Submittals:
1. Seismic Restraint Manufacturer's Qualifications Data:
 - a. Name of firm producing the seismic restraints, business address and telephone number.
 2. Company Field Advisor Data:
 - a. Name, business address and telephone number of Company Field Advisor secured for the required services.

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- b. Certified statement from the Company listing the qualifications of the Company Field Advisor.
- c. Services and each product for which authorization is given by the Company, listed specifically for this project.
- 3. Manufacturer's Certificate of Compliance for Seismic Restraints: Certificate from seismic restraint manufacturer stating that the restraint and its mounting system or anchorage has been tested or analyzed and meets the requirements of NYS Building Code (Section 1621).

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Comply with the applicable requirements of the ASME B31 Piping Codes.
 - 2. Unless otherwise shown or specified, comply with the requirements of the Manufacturer's Standardization Society of the Valve and Fittings Industry (MSS) Standards SP-58, and SP-69.
 - 3. Materials for use in Sprinkler Systems and Standpipe and Hose Systems shall comply with the requirements of NFPA 13 and NFPA 14 as applicable.
 - 4. Hang and support cast iron soil pipe and fittings in accordance with the recommendations of the Cast Iron Soil Pipe's Institute's (CISPI) Cast Iron Soil Pipe and Fittings Handbook.
 - 5. The contractor shall provide pre-engineered or stamped and signed details (by a NYS Licensed Professional Engineer) of seismic restraint systems to meet total design lateral force requirements for support and restraint of mechanical and electrical systems.
 - 6. Seismic components shall be UL listed or California OSHPD (Office of Statewide Health Planning and Development) approved.
- B. Company Field Advisor: Secure the services of a Company Field Advisor from seismic restraint manufacturer for the following:
 - 1. Render advice regarding installation and final adjustment of seismic restraint system.

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2. Render advice on the suitability of each seismic restraint for its particular application.
3. Inspect completed installation of seismic restraint system and certify with an affidavit that the system is installed in accordance with the Contract Documents and is operating properly.
4. Train facility maintenance personnel on the installation of seismic restraint system and routine maintenance of the system.

PART 2 PRODUCTS

2.01 PIPE HANGERS AND SUPPORTS

A. Combination clevis hanger, pipe insulation shield and vapor barrier jacketed high density insulating saddle with companion high density filler piece.

1. Insulating saddles and filler pieces shall be of the same thickness and materials as the adjoining pipe insulation. Saddles shall cover the lower 180 degrees of the pipe or tubing, and companion filler pieces shall cover the upper 180 degrees of the pipe or tubing. Physical sizes, gages, etc. of the components of insulated hangers shall be in accordance with the following schedule:

PIPE OR TUBING SIZE (Inches)	SHIELD LENGTH (Inches)	SHIELD GAGE	SADDLE LENGTH (Inches)	VAPOR BARRIER JACKET LENGTH (Inches)
Up to 2-1/2	4	16	6	10
3 to 6	4	14	6	10
8 to 14	10	12	12	16
16 and up	10	10	12	16

B. Pipe Insulation Shields: Fabricated of steel, with a minimum arc of 180 degrees, unless otherwise indicated. Shields for use with hangers and supports, with the exception of combination clevis type hangers, shall be in accordance with the following schedule:

PIPE OR TUBING SIZE (Inches)	SHIELD LENGTH (Inches)	SHIELD GAGE
Up to 2-1/2	8	18

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3 to 8	10	16
10 to 14	12	12
16 and up	18	10

- C. Pipe Covering Protection Saddles: 3/16 inch thick steel, of sufficient depth for the insulation thickness specified, notched so that saddle contact with the pipe is approximately 50 percent of the total axial cross section. Saddles for pipe 12 inches in size and larger shall have a center support.
- D. Pipe Hangers: Height adjustable standard duty clevis type, with cross bolt and nut.
 - 1. Pipe spreaders or spacers shall be used on cross bolts of clevis hangers, when supporting piping 10 inches in size and larger.
 - 2. Swivel ring type hangers will be allowed for sprinkler piping up to a maximum of 2 inches in size.
- E. Adjustable Floor Rests and Base Flanges: Steel.
- F. Hanger Rods: Mild, low carbon steel, fully threaded or threaded at each end, with two nuts at each end for positioning rod and hanger, and locking each in place.
- G. Riser Clamps: Malleable iron or steel.
- H. Rollers: Cast Iron.

2.02 ANCHORS AND ATTACHMENTS

- A. Sleeve Anchors (Group II, Type 3, Class 3): Molly's Div./USM Corp. Parasleeve Series, Ramset's Dynabolt Series, or Red Head/Phillips AN, HN, or FS Series.
- B. Wedge Anchors (Zinc Plated, Group II, Type 4, Class 1): Hilti's Kwik Bolt Series, Molly's Div./USM Corp. Parabolt PB Series, Ramset's Trubolt T Series, or Red Head/Phillips WS Series.
- C. Self-Drilling Anchors (Group III, Type 1): Ramset's RD Series, or Red Head/Phillips S Series.

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- D. Non-Drilling Anchors (Group VIII, Type 1):
Ramset's Dynaset DS Series, Hilti's HDI Series,
or Red Head/Phillips J Series.
- E. Stud Anchors (Group VIII, Type 2): Red
Head/Phillips JS Series.
- F. Beam Clamps: Forged steel beam clamp, with
weldless eye nut (right hand thread), steel tie
rod, nuts, and washers, Grinnell's Fig No. 292
(size for load, beam flange width, and rod size
required).
- G. Metal Deck Ceiling Bolts: B-Line Systems' Fig.
B3019.
- H. Continuous Slotted Type Concrete Insert,
Galvanized:
 - 1. Load Rating 800 lbs/ft: Kindorf's D-986.
 - 2. Load Rating 1500 lbs/ft: Kindorf's D-980.
 - 3. Load Rating 3000 lbs/ft: Hohmann &
Barnard's Inc. Type CS-H.
 - 4. Load Rating 4500 lbs/ft: Hohmann &
Barnard's Inc. Type CS-HD.
- I. Threaded Type Concrete Insert: Galvanized
ferrous castings, internally threaded to receive
3/4 inch diameter machine bolts.
- J. Wedge Type Concrete Insert: Galvanized box-type
ferrous castings, designed to accept 3/4 inch
diameter bolts having special wedge shaped heads.

2.03 SEISMIC RESTRAINT SYSTEM FOR PIPING

- A. General:
 - 1. Coordinate all structural attachments with
the Commissioner.
 - 2. Design analysis shall include calculated
dead loads, static seismic loads, and
capacity of materials utilized for the
connection of the equipment or system to the
structure.
 - 3. Analysis shall detail anchoring methods,
bolt diameter, and embedment depth.
 - 4. Design seismic restraint devices to accept
without failure the forces calculated per
the applicable building code and as
specified.
 - 5. Friction from gravity loads shall not be
considered resistance to seismic forces.
 - 6. Fire protection systems shall meet the
requirements of NFPA-13 and NFPA-14 for the
building seismic requirements.
 - 7. Construct seismic supports constructed so
that support engagement is maintained.

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8. Stamp seismic supports with manufacturer's name and part number for identification.
 9. Design seismic supports specifically for mitigation of seismic force loads.
 10. Design the stiffness of seismic restraints for mechanical equipment so that the load path for the restraint performs its intended function.
 11. Where possible, utilize components designed with tamper resistant break-off bolt heads or break-off nuts to assure visual verification of proper installation.
 12. Attachment components shall be UL Listed catalog components with published loads designed specifically for seismic application.
- B. Type: Pre-engineered seismic restraint system designed to support and restrain piping to meet applicable lateral force requirements.
- C. Acceptable Manufacturers:
1. B-Line.
 2. Mason Industries.
 3. TOLCO Inc.
- D. Strut/Channel Bracing: 12 gauge solid steel with no holes, 1-5/8 inches wide x 1-5/8 inches deep of single lengths or stitch-welded back-to-back configurations.
- E. Pipe Bracing: Schedule 40 steel pipe.
- F. Cable Bracing: Pre-stretched galvanized aircraft cable 7 x 19 strand core.
- G. Rigid Seismic Braces For Single Hung Pipe Systems: A12 strut channel or schedule 40 steel pipe.
1. Maximum Brace Length: 13 feet 1 inches.
- H. Rigid Seismic Braces For Trapeze Supported Pipe Systems: A12 strut channel or schedule 40 steel pipe.
1. Maximum Brace Length: 13 feet 1 inches.
- I. Cable Seismic Braces For Single Hung Pipe Systems: Pre-stretched aircraft cable 7 x 19 core.

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- J. Cable Seismic Braces For Trapeze Supported Pipe Systems: Pre-stretched aircraft cable 7 x 19 core.
- K. Structural Attachments for Rigid and Cable Seismic Braces For Single Hung and Trapeze Supported Pipe Systems:
 - 1. Structural attachments shall be positive.
 - 2. Do not make structural attachments to the bottom of a bar joist.
 - 3. Supplemental steel shall be installed for all pre-cast decks less than 4 inches thick
 - 4. Do not use concrete inserts or continuous concrete insert strut to attach brace.
 - 5. Wedge type anchors are permitted. The size and embedment depth shall be determined by the supplier of the seismic restraint system and as approved.
- L. Vertical Brace Component (up-thrust protection)
 - 1. Reinforce Vertical Hanger Rod when lengths exceed the following:
 - a. 3/8 inch dia rod: 19 inches.
 - b. 1/2 inch dia rod: 25 inches.
 - c. 5/8 inch dia rod: 31 inches.
 - d. 7/8 inch dia rod: 43 inches.
 - e. 1 inch dia rod: 50 inches.
 - f. 1-1/4 inch dia rod: 62 inches.

2.04 FASTENERS

- A. Bolts, Nuts, Washers, Lags, and Screws: Medium carbon steel; size and type to suit application; galvanized for high humidity locations, and treated wood; plain finish for other interior locations. Except where shown otherwise on the Drawings, furnish type, size, and grade required for proper installation of the Work.

2.05 SHOP PAINTING AND PLATING

- A. Hangers, supports, rods, inserts and accessories used for pipe supports, unless chromium plated, cadmium plated or galvanized shall be shop coated with metal primer paint. Electroplated copper hanger rods, hangers and accessories may be used with copper pipe or copper tubing.
- B. Hanger supports for chromium plated pipe shall be chromium plated brass.

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PART 3 EXECUTION

3.01 PREPARATORY WORK

- A. Place inserts into construction form work expeditiously, so as not to delay the Work.

3.02 INSTALLATION

- A. Do not hang or support one pipe from another or from ductwork.
1. Do not bend threaded rod.
- B. Support all insulated horizontal piping conveying fluids below ambient temperature, by means of hangers or supports with insulation shields installed outside of the insulation.
- C. Space hangers or supports for horizontal piping on maximum center distances as listed in the following hanger schedules, except as otherwise specified, or noted on the Drawings.
1. For Steel, and Threaded Brass Pipe:

PIPE SIZE (Inches)	MAXIMUM SPACING (Feet)
1 and under	8
1-1/4 and 1-1/2	9
2	10
2-1/2 and up	12

2. For Grooved End Steel Pipe:

PIPE SIZE (Inches)	MAXIMUM SPACING (Feet)
1-1/2 and under	7
2 through 4	10
5 and over	12

No pipe length shall be left unsupported between any two coupling joints.

3. For Copper Pipe and Copper Tubing:

PIPE OR TUBING SIZE (Inches)	MAXIMUM SPACING (Feet)
1-1/2 and under	6
2 and over	10

4. Cast Iron Soil Pipe:
a. General:

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- 1) Where piping is suspended on centers in excess of 18 inches by means of non-rigid hangers, provide sway bracing to prevent horizontal pipe movement.
 - 2) Additionally, brace piping 5 inches and larger to prevent horizontal movement and/or joint separation. Provide braces, blocks, rodding or other suitable method at each branch opening, or change of direction
- b. For Bell & Spigot Cast Iron Soil Pipe: Space hangers or support pipe at each joint or on maximum centers of 5 feet. Place hangers or supports as close as possible to joints and when hangers or supports do not come within 1 foot of a branch line fitting, install an additional hanger or support at the fitting.
- c. For Hubless Cast Iron Soil Pipe: Space hangers or support pipe at each joint or on maximum centers of 5 feet. Place hanger or supports as close as possible to joints and when hangers or supports do not come within 1 foot of a branch line fitting, install an additional hanger or support at the fitting.
8. For Directional Changes: Install a hanger or support close to the point of change of direction of all pipe runs in either a horizontal or vertical plane.
 9. For Concentrated Loads: Install additional hangers or supports, spaced as required and directed, at locations where concentrated loads such as in-line pumps, valves, fittings or accessories occur, to support the concentrated loads.
 10. For Branch Piping Runs and Runouts Over 5 feet In Length: Install a minimum of one hanger, and additional hangers if required by the hanger spacing schedules.
 11. Parallel Piping Runs: Where several pipe lines run parallel in the same plane and in close proximity to each other, trapeze hangers may be submitted for approval. Base hanger spacing for trapeze type hangers on the smallest size of pipe being supported. Design the entire hanger assembly based on a

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safety factor of five, for the ultimate strength of the material being used.

12. Support floor drain traps from the overhead construction, with hangers of type and design as required and approved. Overhead supports are not required for floor drain traps installed directly below earth supported concrete floors.

D. Size hanger rods in accordance with the following:

PIPE OR TUBING SIZE (Inches)	SINGLE ROD HANGER SIZE (Inches)		DOUBLE ROD HANGER SIZE (Inches)	
	PIPE	TUBING	PIPE	TUBING
1/2 to 2	3/8	1/4	3/8	1/4
2-1/2 and 3	1/2	3/8	3/8	1/4
4 and 5	5/8	1/2	1/2	3/8
6	3/4	1/2	5/8	1/2
8, 10 and 12	7/8	5/8	3/4	5/8

1. Size hanger rods, for piping over 12 inches in size and multiple line supports, based on a safety factor of five for the ultimate strength of the materials being used.
2. Secure hanger rods as follows: Install one nut under clevis, angle or steel member; one nut on top of clevis, angle or steel member; one nut inside insert or on top of upper hanger attachment and one nut and washer against insert or on lower side of upper hanger attachment. A total of four nuts are required for each rod, two at upper hanger attachment and two at hanger.

E. Vertical Piping:

1. Support vertical risers of piping systems, by means of heavy duty hangers installed close to base of pipe risers, and by riser clamps with extension arms at intermediate floors, with the distance between clamps not to exceed 25 feet, unless otherwise specified. Support pipe risers in vertical shafts equivalent to the aforementioned. Install riser clamps above floor slabs, with the extension arms resting on floor slabs. Provide adequate clearances for risers that

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are subject to appreciable expansion and contraction, caused by operating temperature ranges.

2. Support extension arms of riser clamps, secured to risers to be insulated for cold service, 4 inches above floor slabs, to allow room for insulating and vapor sealing around riser clamps.
 3. Install intermediate supports between riser clamps on maximum 6 foot centers, for copper tubing risers 1-1/4" in size and smaller, installed in finished rooms or spaces other than mechanical equipment machine or steam service rooms, or penthouse mechanical equipment rooms.
 4. Support cast iron risers, by means of heavy duty hangers installed close to the base of the pipe risers, and 1/4 inch thick malleable iron or steel riser clamps with extension arms at each floor level, with the distance between clamps not to exceed 25 feet. Support cast iron risers in vertical shafts equivalent to the aforementioned.
 5. Support hubless cast iron risers, by means of heavy duty hangers installed close to the base of the pipe risers, and by malleable iron or steel riser clamps with the extension arms at each floor level, with the distance between clamps or intermediate supports not to exceed 12 feet. Support risers in vertical shafts equivalent to the aforementioned.
- F. Floor Supports: Install adjustable yoke rests with base flanges, for the support of piping, unless otherwise indicated on the Drawings. Install supports in a manner, which will not be detrimental to the building structure.
- G. Underground Cast Iron Pipe Supports: Firmly bed pipe laid underground, on solid ground along bottom of pipe. Install masonry piers for pipe laid in disturbed or excavated soil or where suitable bearing cannot be obtained. Support pipe, laid proximate to building walls in disturbed or excavated soil, or where suitable bearing cannot be obtained, by means of wall brackets or hold-fasts secured to walls in an approved manner.

3.03 UPPER HANGER ATTACHMENTS

**Pipe Hangers
And Supports**

220529- 11

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- A. General:
1. Secure upper hanger attachments to overhead structural steel, steel bar joists, or other suitable structural members.
 2. Do not attach hangers to steel decks that are not to receive concrete fill.
 3. Do not attach hangers to precast concrete plank decks less than 2-3/4 inches thick.
 4. Do not use flat bars or bent rods as upper hanger attachments.
- B. Attachment to Steel Frame Construction: Provide intermediate structural steel members where required by pipe support spacing. Select steel members for use as intermediate supports based on a minimum safety factor of five.
1. Do not use drive-on beam clamps.
 2. Do not support piping over 4 inches in size from steel bar joists. Secure upper hanger attachments to steel bar joists at panel points of joists.
 3. Do not drill holes in main structural steel members.
 4. Beam clamps, with tie rods as specified, may be used as upper hanger attachments for the support of piping, subject to clamp manufacturer's recommended limits.
- C. Attachment to Concrete Filled Steel Decks:
1. New Construction: Install metal deck ceiling bolts.
 2. Existing Construction: Install welding studs (except at roof decks). Do not support a load in excess of 250 lbs from any single welded stud.
 3. Do not attach hangers to decks less than 2-1/2 inches thick.
- D. Attachment to Cast-In-Place Concrete: Secure to overhead construction by means of cast-in-place concrete inserts.
- E. Attachment to Existing Cast-In-Place Concrete:
1. For piping up to a maximum of 4 inches in size, secure hangers to overhead construction with self-drilling type expansion shields and machine bolts.
 2. Secure hangers to wall or floor construction with single unit expansion shields or self-

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drilling type expansion shields and machine bolts.

3.04 ANCHORS, RESTRAINTS, RIGID SUPPORTS, STAYS AND SWAY BRACES

- A. Install pipe anchors, restraints and sway braces, at locations noted on the Drawings. Design anchors so as to permit piping to expand and contract freely in opposite directions, away from anchor points. Install anchors independent of all hangers and supports, and in a manner that will not affect the structural integrity of the building.
- B. Cast Iron Soil Piping Systems:
1. Where piping is suspended on centers in excess of 18 inches by means of non-rigid hangers, provide sway braces, of design, number and location in accordance with the Cast Iron Soil Pipe Institute's Cast Iron Soil Pipe and Fittings Handbook to prevent horizontal pipe movement.
 2. Additionally, brace piping 5 inches and larger to prevent horizontal movement and/or joint separation. Provide braces, blocks, rodding or other suitable method at each branch opening, or change of direction in accordance with the Cast Iron Soil Pipe Institute's Cast Iron Soil Pipe and Fittings Handbook to prevent horizontal pipe movement.

3.05 COMBINATION CLEVIS HANGER, PIPE INSULATION SHIELD AND VAPOR BARRIER JACKETED HIGH DENSITY INSULATING SADDLES

- A. Install a combination clevis hanger, pipe insulation shield and vapor barrier jacketed high density insulating saddles, at all points of support for piping or tubing to be insulated for cold service. Furnish companion high density vapor barrier jacketed saddle pieces, of the same material, thickness and length, for installation over the top 180 degree surface of pipe or tubing, at each point of support where an insulated clevis hanger is utilized.

3.06 PIPE INSULATION SHIELDS

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- A. Unless otherwise specified, install a pipe insulation shield, at all points of support. Center shields on all hangers and supports outside of high density insulation insert, and install in such a manner so as not to cut, or puncture jacket.

3.07 PIPE COVERING PROTECTION SADDLES

- A. Install pipe covering protection saddles at all points of support, for steel piping 6 inches in size and larger, insulated with hot service insulation. Weld saddles to piping to insure movement with pipe.

3.08 SEISMIC RESTRAINT SYSTEMS

- A. General:
1. Install seismic restraints in accordance with seismic restraint manufacturer's printed installation instructions and guidelines unless otherwise specified.
 2. Do not use powder-actuated fasteners for seismic restraint anchorage in tension applications.
 3. Laterally support vertical risers with riser clamps at each floor unless otherwise specified.
 4. When systems cross building seismic separation points, pass between buildings, or are supported from different portions of the building, install to allow differential support displacements without damaging the pipe, equipment or support connections. Install pipe loops, anchors, offsets, and guides as required to provide specified capability of motion and limit movement of adjacent piping.
 5. Do not brace seismic bracing to different parts of the building that may respond differently during seismic activity.
 6. Provide adequately sized openings in walls, floors, and ceilings for anticipated seismic movement. Provide fire stopping in fire-rated walls.
 7. Seismic restraint installations shall not cause any modifications in the positioning of equipment or piping resulting in stresses or misalignment.
 8. No rigid connections between equipment, piping, duct, or conduit shall be made to

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the building structure that degrades the noise and vibration-isolation system specified.

9. Bracing attached to structural members may present additional stresses. Submit loads to the Commissioner.
10. Provide vertical stiffening components to support rods when necessary to accept compressive loads. Welding of components to vertical support rods is not acceptable.
11. Clevis supported pipe must have cross-bolt support at each seismic bracing location.
12. Notify Commissioner if any discrepancies between the specifications and field conditions prior to installation.

B. Seismic Restraints for Piping:

1. Trapeze assemblies supporting pipes shall be braced considering the total weight of the pipes on the trapeze.
2. Provide transverse bracing at 40 ft. maximum spacing for welded steel pipe, brazed copper pipe or grooved piping with UL 213 listed connections.
 - a. Traverse bracing for threaded steel or copper pipe or non-listed UL grooved connections shall not exceed 20 ft. maximum.
3. Provide longitudinal bracing at 80 ft. maximum spacing for welded steel pipe, brazed copper pipe or grooved piping with UL 213 listed connections.
 - a. Traverse bracing for threaded steel or copper pipe or non-listed UL grooved connections shall not exceed 40 ft. maximum.
4. Transverse piping restraints for one pipe section may also act as a longitudinal restraint for a pipe section of the same size connected perpendicular to it if the restraint is installed within 24-inches of the elbow centerline or tee or combined stresses are within allowable limits at longer distances.
5. Branch line piping shall not be used to brace main piping.
 - a. No larger diameter pipe shall be braced by a smaller diameter pipe.
6. Attach all longitudinal seismic braces directly to piping.

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- a. Encapsulate clamp and brace with insulation equal to that on the pipe.
7. Use hold down clamps to attach pipe to trapeze hangers before installing seismic restraints.
8. Brace vibration isolated piping with cables to allow flexibility.

END OF SECTION

SECTION 220553
PIPE AND VALVE IDENTIFICATION

PART 1 GENERAL

1.01 REFERENCES

- A. ANSI A13.1 - Scheme for Identification of Piping Systems.

1.02 SUBMITTALS

- A. Product Data: Catalog sheets, specifications and installation instructions for each item specified.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. W.H. Brady Co., Milwaukee, WI.
- B. Emed Co., Buffalo, NY.
- C. Panduit Corp., Tinley Park, IL.
- D. Seton Nameplate Corp., New Haven, CT.

2.02 PIPE MARKERS AND ACCESSORIES

- A. Snap-on Marker: One piece wrap around type constructed of precoiled acrylic plastic with clear polyester coating, integral flow arrows, legend printed in alternating directions, 3/4 inch adhesive strip on inside edge, and 360 degree visibility.
- B. Strap-On Marker: Strip type constructed of precoiled acrylic plastic with clear polyester coating, integral flow arrows, legend printed in alternating directions, factory applied grommets, and pair of stainless steel spring fasteners.
- C. Stick-On Marker: Pressure sensitive adhesive backed type constructed of vinyl with clear polyester coating, and integral flow arrows for applications where flow arrow banding tape is not being used.
- D. Pipe Marker Legend and Color Field Sizes:

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OUTSIDE DIAMETER OF PIPE OR INSULATION (Inches)	LETTER SIZE (Inches)	LENGTH OF COLOR FIELD (Inches)
3/4 to 1-1/4	1/2	8
1-1/2 to 2	3/4	8
2-1/2 to 6	1-1/4	12
8 to 10	2-1/2	24
Over 10	3-1/2	32

- E. Banding Tapes: Pressure sensitive adhesive backed type constructed of vinyl with clear polyester coating.
1. Plain Tape: Unprinted type; color to match pipe marker background.
 2. Flow Arrow Tape: Printed type with integral flow arrows; color to match pipe marker background.
- F. Pipe Size Labels: Pressure sensitive adhesive backed type constructed of vinyl with clear polyester coating, vertical reading pipe size in inches, and legend size matching adjacent pipe marker.

2.03 PIPE SERVICE IDENTIFICATION TAGS

- A. Type: No. 19 B & S gage brass, with 1/4 inch high pipe service abbreviated legend on one line, over 1/2 inch high pipe size legend in inches, both deep stamped and black filled; and 3/16 inch top hole for fastener.
- B. Size: 2 inch square tag.
- C. Fasteners: Brass "S" hook or brass jack chain of size as required for pipe to which tag is attached.

2.04 VALVE SERVICE IDENTIFICATION TAGS

- A. Type: No. 19 B & S gage brass, with 1/4 inch high valve service abbreviated lettering on one line over 1/2 inch high valve service chart number, both deep stamped and black filled; and with 3/16 inch top hole for fastener.
- B. Sizes:
1. Plumbing Use: 1-1/2 inch hexagon.

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- C. Fasteners: Brass "S" hook or brass jack chain of size as required for valve stem or handle to which tag is attached.

2.05 VALVE SERVICE IDENTIFICATION CHART FRAMES

- A. Type: Satin finished extruded aluminum frame with rigid clear plastic glazing, size to fit 8-1/2 x 11 inches valve chart.

PART 3 EXECUTION

3.01 PREPARATION

- A. Complete testing, insulation and finish painting work prior to completing the Work of this Section.
- B. Clean pipe surfaces with cleaning solvents prior to installing piping identification.
- C. Remove dust from insulation surfaces with clean cloths prior to installing piping identification.

3.02 INSTALLATION

- A. Install the Work of this Section in accordance with the manufacturer's printed installation instructions, unless otherwise specified.
- B. Stick-On Pipe Markers:
 - 1. Install minimum of 2 markers at each specified location, 90 degrees apart on visible side of pipe.
 - 2. Encircle ends of pipe markers around pipe or insulation with banding tape with one inch lap. Use plain banding tape on markers with integral flow arrows, and flow arrow banding tape on markers without integral flow arrows.
- C. Pipe Size Labels: Install labels adjacent to each pipe marker and upstream from flow arrow. Install a minimum of 2 pipe size labels at each specified location, 90 degrees apart on visible side of pipe.
- D. Pipe Service Identification Tags: Attach tags to piping being identified with "S" hooks or jack chains.

3.03 PIPING IDENTIFICATION SCHEDULE

- A. Piping Identification Types:

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1. Piping or Insulation under 3/4 inch od: Pipe identification tags.
 2. Piping or Insulation 3/4 inch to 5-7/8 inch od: Snap-on marker or stick-on marker.
 3. Piping or Insulation 6 inch od and Larger: Strap-on marker or stick-on marker.
- B. Identify exposed piping, bare or insulated, as to content, size of pipe and direction of flow, with the following exceptions:
1. Piping in non-walk-in tunnels or underground conduits between manholes.
 2. Piping in furred spaces or suspended ceilings, except at valve access panels where valves and piping shall be identified as specified for exposed piping systems.
 3. Piping in finished spaces such as offices, class rooms, wards, toilet rooms, shower rooms and spaces as specified.
- C. Locate piping identification to be visible from exposed points of observation.
1. Locate piping identification at valve locations; at points where piping enters and leaves a partition, wall, floor or ceiling, and at intervals of 20 feet on straight runs.
 2. Where 2 or more pipes run in parallel, place printed legend and other markers in same relative location.

3.04 VALVE IDENTIFICATION SCHEDULE

- A. Valve Service Identification Tags:
1. Tag control valves, except valves at equipment, with a brass tag fastened to the valve handle or stem, marked to indicate service and numbered in sequence for the following applications:
 - a. Domestic water valves controlling mains, risers and branch runouts.
 - b. Gas valves controlling mains, risers, and branch runouts.
 - c. Valves in sprinkler and fire standpipe systems, except hose valves.
- B. Valve Service Identification Charts:
1. Provide 2 framed valve charts for each piping system specified to be provided with valve identification tags. Type charts on 8-1/2 x 11 inches heavy white bond paper, indicating valve number, service and location.
 2. Hang framed charts at locations as directed.

END OF SECTION

SECTION 220576
DRAINAGE ACCESSORIES

PART 1 GENERAL

1.01 REFERENCES

- A. Comply with the applicable requirements of ASME A112.36.2M - Cleanouts, and ASME A112.1.2 - Drainage Funnels and Air Gaps.

1.02 SUBMITTALS

- A. Product Data: Catalog sheets, specifications, and installation instructions for each item specified except fasteners.

1.03 MAINTENANCE

- A. Special Tools: Deliver the following to the Commissioner:
1. Tools for Vandal Resistant Fasteners: One for each type and size.
 2. T-Handle Wrench for Cleanout Plugs: One for each type and size.

PART 2 PRODUCTS

2.01 CLEANOUT PLUG

- A. Cast brass or bronze, with threaded end, and raised or countersunk head.
1. Tapped head for attachment of cleanout wall or deck plate covers where required.
- B. Anti-Seize Lubricant: Never-Seez by Bostik Chemical Group, Broadview, IL; Molycote 1000 by Dow Corning Corp, Midland, MI; Anti-Seize Lubricant by Loctite Corp, Newington, CT.

2.02 CLEANOUT

- A. Threaded pipe fitting or cast iron ferrule with gas tight cleanout plug.

2.03 CLEANOUT WALL PLATE

- A. Round, stainless steel or polished chrome plated bronze cover plate with stainless steel vandal resistant fastener to secure to cleanout plug.

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2.04 CLEANOUT DECK PLATE

- A. Standard duty floor cleanout fitting with coated cast iron body; round, polished nickel bronze scoriated top secured to cleanout plug with stainless steel vandal resistant fastener; threaded height adjustment, cast iron head, gas tight cleanout plug, and connection to match piping option selected.
- B. Membrane flange and clamping collar, secured with corrosion resistant fasteners.

2.05 CONDUCTOR EXPANSION JOINT

- A. Coated cast iron body with brass telescoping sleeve, adjustable packing gland with graphite, neoprene or mineral fiber gasket, and connection to match piping option selected.

2.06 AIR GAP FITTING

- A. Coated cast iron body with air gaps, set screw or threaded inlet, and outlet connection to match piping option selected.

2.07 FASTENERS

- A. Corrosion Resistant Fasteners: Brass, bronze, or Type 302 or 304 stainless steel bolts.
- B. Vandal Resistant Fasteners: Torx head with center pin.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install the Work of this section in accordance with the manufacturer's printed installation instructions, unless otherwise specified.
- B. Cleanout Plug: Lubricate threads with anti-seize lubricant before final installation.
- C. Secure external components in place with vandal resistant fasteners or devices which cannot be removed without special tools.

END OF SECTION

SECTION 220577
FLOOR AND AREA DRAINS

PART 1 GENERAL

1.01 REFERENCES

- A. Unless otherwise specified, the Work of this section shall meet the applicable requirements of FS WW-P-541 - Plumbing Fixtures, and ASME A112.21.1M - Floor Drains.

1.02 SUBMITTALS

- A. Product Data: Catalog sheets, specifications and installation instructions for each type drain specified.

1.03 MAINTENANCE

- A. Special Tools: Deliver to the Commissioner.
1. Tools for Vandal Resistant Fasteners: One for each type and size.

PART 2 PRODUCTS

2.01 FLOOR DRAIN

- A. Drain Body: Coated cast iron, two-piece body with reversible flashing clamp, minimum 9 inch dia drainage flange, corrosion resistant bolts, weep holes, bottom outlet, and connection to match piping option selected.
- B. Strainer Head: Round, minimum 7 inch dia, nickel bronze with threaded shank for height adjustment.
- C. Strainer Grate: Polished nickel bronze, heel proof; secured with stainless steel vandal resistant fasteners.
- D. Acceptable Drain Series: Josam 30000A, Smith 2010A, Wade W1100, and Zurn Z415.

2.02 AREA DRAIN (A.D.)

- A. Drain Body: Round, coated cast iron, two-piece body with flashing clamp, 12 inch x 9 inch drainage flange, corrosion resistant bolts, weep holes, bottom outlet, and connection to match piping option selected.

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- B. Strainer Head: 9 inch x 6 inch, coated cast iron.
- C. Strainer Grate: Nickel Bronze, heel proof, hinged grate secured with stainless steel vandal resistant fasteners.
- D. Acceptable Drain Series: Josam, Smith 2280, Wade, and Zurn.

2.03 TRENCH DRAIN (T.D.)

- A. Trench drain shall be galvanized cast iron body and flange, bottom outlet caulk connection with dome strainer with end plates and gasket. Grates to be installed with vandal proof screws. Length of drain shall be as shown on Drawings. Drain shall be Smith Fig. 2885-F-G-C-U-DBS, Josam 76000-20-30-40-X, Zurn Z664-C-G-VP, MIFAB T1320-FL-6-C-13, Wade 2950-26-39 or Watts Drainage Products TD940-FC-6-21.

2.04 FASTENERS

- A. Corrosion Resistant Fasteners: Brass, bronze, or Type 302 or 304 or stainless steel bolts.
- B. Vandal Resistant Fasteners: Torx head with center pin.

2.05 FREE AREA OF GRATE

- A. Minimum strainer grate free area listed below for each connecting pipe size:

CONNECTING PIPE SIZE (Inches Nominal)	INTERIOR DRAINS FREE AREA (Square Inches)	EXTERIOR DRAINS FREE AREA (Square Inches)
1-1/2	3.06	4.08
2	4.71	6.28
3	10.59	14.12
4	18.90	25.20
5	29.40	39.20
6	42.45	56.60
8	75.38	100.50

PART 3 EXECUTION

3.01 INSTALLATION

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- A. Install the Work of this section in accordance with the manufacturer's printed installation instructions, unless otherwise specified.
- B. Protect weep holes from plugging during installation. Rod out weep holes after installation to remove obstructions.
- C. Set drainage flange flush with top of structural floor slab, or at elevation otherwise indicated.
- D. After membrane waterproofing installed and cured, secure clamping ring.
- E. Adjust strainer head to height indicated. If height not indicated, set at 1/2 inch below finished floor elevation.
- F. Secure external components in place with vandal resistant fasteners or devices which cannot be removed without special tools.

END OF SECTION

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SECTION 220700
PIPING INSULATION

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Through Penetration Firestops: Section 078400.
- B. Painting: Section 099000
- C. Pipe Hangers and Supports: Section 220529.

1.02 ABBREVIATIONS

- A. FS: Federal Specification.
- B. K: Thermal Conductivity, i.e., maximum Btu per inch thickness per hour per square foot.
- C. pcf: Pounds per cubic foot.
- D. PVC: Polyvinylchloride.

1.03 SUBMITTALS

- A. Product Data: Manufacturer's catalog sheets, specifications and installation instructions for the following:
 - 1. Insulation Materials.
 - 2. Jacket Materials.
- B. Quality Control Submittals:
 - 1. Installers Qualification Data:
 - a. Name of each person who will be performing the Work, and their employer's name, business address and telephone number.
 - b. Furnish names and addresses of the required number of similar projects that each person has worked on which meet the qualifications.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Insulation installed inside buildings, including laminated jackets, mastics, sealants and adhesives shall have a Fire Spread/Smoke Developed Rating of 25/50 or less based on ASTM E 84.

PART 2 PRODUCTS

2.01 PIPING INSULATION

- A. Fibrous Glass (Mineral Fiber) Insulation:
Composed principally of fibers manufactured from rock, slag, or glass, with or without binders, and asbestos free.
1. Preformed Pipe Insulation: Minimum density 3 pcf; ASTM C 547:
 - a. Class 1 (Suitable for Temperatures Up to 450 degrees F): K of 0.26 at 75 degrees F.
 2. Premolded Fitting Insulation: Minimum density 4.0 pcf, K of 0.26 at 75 degrees F; ASTM C 547, Class 1.
 3. Insulation Inserts for PVC Fitting Jackets: Minimum density 1.5 pcf, K of 0.28 at 75 degrees F; ASTM C 553, Type III.
 - a. Suitable for temperatures up to 450 degrees F.
- B. High Density Jacketed Insulation Inserts for Hangers and Supports:
1. For Use with Fibrous Glass Insulation:
 - a. Cold Service Piping:
 - 1) Polyurethane Foam: Minimum density 4 pcf, K of 0.13 at 75 degrees F, minimum compressive strength of 125 psi.
 - b. Hot Service Piping:
 - 1) Calcium Silicate: Minimum density 15 pcf, K of 0.50 at 300 degrees F; ASTM C 533.
 - 2) Perlite: Minimum density 12 pcf, K of 0.60 at 300 degrees F; ASTM C 610.
 2. For Use with Flexible Elastomeric Foam Insulation: Hardwood dowels and blocks, length or thickness equal to insulation thickness, other dimensions as specified or required.
- D. Cements:
1. Fibrous Glass Thermal Insulating Cement: Asbestos free; ASTM C 195.
 2. Fibrous Glass Hydraulic Setting Thermal Insulating and Finishing Cement: ASTM C 449/C 449M.

2.02 INSULATION JACKETS

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- A. Laminated Vapor Barrier Jackets for Piping:
Factory applied by insulation manufacturer,
conforming to ASTM C 1136, Type I.
 - 1. Type I: Reinforced white kraft and aluminum
foil laminate with kraft facing out.
 - a. Pipe Jackets: Furnished with integral
1-1/2 inch self sealing longitudinal
lap, and separate 3 inch wide adhesive
backed butt strips.
 - 2. Laminated vapor barrier jackets are not
required for flexible elastomeric foam
insulation.

- B. Premolded PVC Fitting Jackets:
 - 1. Constructed of high impact, UV resistant PVC.
 - a. ASTM D 1784, Class 14253-C.
 - b. Working Temperature: 0-150 degrees F.

- C. Metal Jacketing:
 - 1. Aluminum: ASTM B 209, Alloys 1100, 30003,
3105 or 5005, Temper H14, 0.016 inch thick.
 - a. Factory Pre-formed Sectional Pipe
Jacketing:
 - 1) Smooth outer finish with integral
bonded laminated polyethylene film
- kraft paper moisture barrier
underside.
 - 2) Pittsburgh or modified Pittsburgh
longitudinal lock seams.
 - 3) 2 inch overlapping circumferential
joints with integral locking clips,
or butt joints sealed with 2 inch
wide mastic backed aluminum snap
bands.
 - b. Fastening Devices:
 - 1) Strapping: Type 18-8 stainless
steel, 0.020 inch thick, 1/2 and
3/4 inch wide as specified.
 - 2) Wing Seals: Type 18-8 stainless
steel, 0.032 inch thick.
 - 3) Sheet Metal Screws: Panhead, Type
A, hardened aluminum, and stainless
steel.
 - 2. Circumferentially Corrugated Aluminum
Jacketing: Childer's Corrolon.
 - a. Construction: 3/16 inch
circumferentially corrugated embossed
aluminum, ASTM B 209, Types 1100, 3003,
3105, or 505, H-14 temper, 0.016 inch
thick.

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- b. Moisture Barrier: Integrally bonded to jacket over entire surface in contact with insulation.
- c. Fastening Devices:
 - 1) Strapping: 0.020 inch thick by 1/2 inch wide, Type 3003, 3105, 5005, H-14 temper.
 - 2) Wing Seals: 0.032 inch thick Type 5005, H-14 temper aluminum.

- E. Under Lavatory Piping Protection Cover: ADA compliant.
 - 1. Construction: 1/8 inch thick chemical, microbial, and fungal resistant, injection molded smooth PVC vinyl with internal ribs.
 - 2. Fasteners: Reusable, finger press internal fasteners presenting no sharp or abrasive external surfaces.
 - 3. Cover Trimming: Tear on internal, dimensioned tear lines for proper fit.
 - 4. Kit includes covering for 8 inch tailpiece-trap, 8 inch waste arm, hot and cold water supplies and valves, and required fasteners.
 - 5. Acceptable Covers:
 - a. Lav Guard 2, E-Z Series by IPS Corp., 202 Industrial Park Lane, Collierville, TN 38017, (800) 340-5969, www.truebro.com.
 - b. Pro-Extreme Series by Plumberex, P.O. Box 1684, Palm Springs, CA 92263, (800) 475-8629, www.plumberex.com.

2.03 ADHESIVES, MASTICS, AND SEALERS

- A. Lagging Adhesive (Canvas Jackets): Childers' CP-50A, Epolux's Cadalag 336, Foster's 30-36.
- B. Vapor Seal Adhesive (Fibrous Glass Insulation): Childers' CP-82, Epolux's Cadoprene 400, Foster's 85-75 or 85-20.
- C. Vapor Barrier Mastic/Joint Sealer (Fibrous Glass Insulation): Childers' CP-30, Epolux's Cadalar 670, Foster's 95-44 or 30-35.
- D. Adhesive (Flexible Elastomeric Foam): Armstrong's 520, Childers' CP-80, Epolux's Cadoprene 488, Foster's 82-40.
- E. Adhesive (Reinforcing Membrane): Childers' Chil-Spray WB CP-56.

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- F. Mastic (Reinforcing Membrane): Childers' AK-CRYL CP-9.
- G. Sealant (Metal Pipe Jacket): One-part silicone sealant for high temperatures; Dow Corning's Silastic 736 RTV or General Electric's RTV 106.

2.04 MISCELLANEOUS MATERIALS

- A. Pressure Sensitive Tape for Sealing Laminated Jackets:
 - 1. Acceptable Manufacturers: Alpha Associates, Childers, Ideal Tape, Morgan Adhesive.
 - 2. Type: Same construction as jacket.
- B. Wire, Bands, and Wire Mesh:
 - 1. Binding and Lacing Wire: Nickel copper alloy or copper clad steel, gage as specified.
 - 2. Bands: Galvanized steel, 1/2 inch wide x 0.015 inch thick, with 0.032 inch thick galvanized wing seals.
 - 3. Wire Mesh: Woven 20 gage steel wire with 1 inch hexagonal openings, galvanized after weaving.
- C. Reinforcing Membrane: Glass or Polyester, 10 x 10 mesh. Alpha Associates Style 59, Childer's Chil-Glas, Foster's MAST-A-FAB.

PART 3 EXECUTION

3.01 PREPARATION

- A. Perform the following before starting insulation Work:
 - 1. Install hangers, supports and appurtenances in their permanent locations.
 - 2. Complete testing of piping.
 - 3. Clean and dry surfaces to be insulated.

3.02 INSTALLATION, GENERAL

- A. Install the Work of this Section in accordance with the manufacturer's printed installation instructions unless otherwise specified.
- B. Provide continuous piping insulation and jacketing when passing thru interior wall, floor, and ceiling construction.
 - 1. At Through Penetration Firestops: Coordinate insulation densities with the requirements of

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approved firestop system being installed.
See Section 078400.

- a. Insulation densities required by approved firestop system may vary with the densities specified in this Section. When this occurs use the higher density insulation.
- C. Do not intermix different insulation materials on individual runs of piping.

3.03 INSTALLATION AT HANGERS AND SUPPORTS

- A. Reset and realign hangers and supports if they are displaced while installing insulation.
- B. Install high density jacketed insulation inserts at hangers and supports for insulated piping.
- C. Insulation Inserts For Use with Fibrous Glass Insulation:
 1. Where clevis hangers are used, install insulation shields and high density jacketed insulation inserts between shield and pipe.
 - a. Where insulation is subject to compression at points over 180 degrees apart, e.g. riser clamps, U-bolts, trapezes, etc.; fully encircle pipe with 2 protection shields and 2 high density jacketed fibrous glass insulation inserts within supporting members.
 - 1) Exception: Locations where pipe covering protection saddles are specified for hot service piping, 6 inch and larger.

3.04 INSTALLATION OF FIBROUS GLASS COLD SERVICE INSULATION

- A. Install insulation materials with a field or factory applied ASTM C 1136 Type I laminated vapor barrier jacket, unless otherwise specified.
- B. Piping:
 1. Butt insulation joints together, continuously seal minimum 1-1/2 inch wide self-sealing longitudinal jacket laps and 3-inch wide butt adhesive backed strips.
 - a. Substitution: 3 inch wide pressure sensitive sealing tape, of same material as jacket, may be used in lieu of butt strips.
 2. Bed insulation in a 2-inch wide band of vapor barrier mastic, and vapor seal exposed ends

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of insulation with vapor barrier mastic at each butt joint between pipe insulation and equipment, fittings or flanges at the following intervals:

- a. Horizontal Pipe Runs: 21 ft.
- b. Vertical Pipe Runs: 9 ft.

- C. Fittings, Valves, Flanges and Irregular Surfaces:
 - 1. Insulate with mitre cut or premolded fitting insulation of same material and thickness as pipe insulation.
 - 2. Secure insulation in place with 16-gage wire, with ends twisted and turned down into insulation.
 - 3. Butt insulation against pipe insulation and bond with joint sealer.
 - 4. Insulate valves up to and including bonnets, without interfering with packing nuts.
 - 5. Apply leveling coat of insulating cement to smooth out insulation and cover wiring.
 - 6. When insulating cement has dried, seal fitting, valve and flange insulation, by imbedding a layer of reinforcing membrane or 4 oz. canvas jacket between 2 flood coats of vapor barrier mastic, each 1/8 inch thick wet.
 - 7. Lap reinforcing membrane or canvas on itself and adjoining pipe insulation at least 2 inches.
 - 8. Trowel, brush or rubber glove outside coat over entire insulated surface.
 - 9. Exceptions:
 - a. Type C and D Piping Systems: Valves, fittings and flanges may be insulated with premolded PVC fitting jackets, with fibrous glass insulation inserts.
 - 1) Additional insulation inserts are required for services with operating temperatures under 45 degrees F or where insulation thickness exceeds 1-1/2 inches. The surface temperature of PVC fitting jacket must not go below 45 degrees F.

3.05 INSTALLATION OF FIBROUS GLASS HOT SERVICE INSULATION

- A. Install insulation materials with field or factory applied ASTM C 1136 Type I laminated vapor barrier jacket unless otherwise specified.
- B. Canvas Jackets on Piping, Fittings, Valves, Flanges, Unions, and Irregular Surfaces:

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1. For Piping 2 inch Size and Smaller: 4 oz per sq yd unless otherwise specified.
2. For Piping Over 2 inch Size: 6 oz per sq yd unless otherwise specified.

C. Piping:

1. Butt insulation joints together, continuously seal minimum 1-1/2 inch wide self-sealing longitudinal jacket laps and 3-inch wide adhesive backed butt strips.
 - a. Substitution: 3 inch wide pressure sensitive sealing tape, of same material as the jacket, may be used in lieu of butt strips.
2. Fill voids in insulation at hanger with insulating cement.
3. Exceptions:
 - a. Piping in Accessible Shafts, Attic Spaces, Crawl Spaces, Unfinished Spaces and Concealed Piping: Butt insulation joints together and secure minimum 1-1/2 inch wide longitudinal jacket laps and 3 inch wide butt strips of same material as jacket, with outward clinching staples on maximum 4 inch centers. Fill voids in insulation at hangers with insulating cement.

D. Fittings, Valves, Flanges and Irregular Surfaces:

1. Insulate with mitre cut or premolded fitting insulation of same material and thickness as insulation.
2. Secure in place with 16-gage wire, with ends twisted and turned down into insulation.
3. Butt fitting, valve and flange insulation against pipe insulation, and fill voids with insulating cement.
4. Insulate valves up to and including bonnets, without interfering with packing nuts.
5. Apply leveling coat of insulating cement to smooth out insulation and cover wiring.
6. After insulating cement has dried, coat insulated surface with lagging adhesive, and apply 4 oz or 6 oz canvas jacket as required by pipe size.
 - a. Lap canvas jacket on itself and adjoining pipe insulation at least 2 inches.
 - b. Size entire canvas jacket with lagging adhesive.
7. Exceptions:
 - a. In Types E, and F Service Piping Systems: Valves, fittings and flanges

may be insulated with premolded PVC fitting jackets, with fibrous glass insulation inserts.

- 1) Additional insulation inserts are required for services with operating temperatures over 250 degrees F or where insulation thickness exceeds 1-1/2 inches. The surface temperature of PVC fitting jacket must not exceed 150 degrees F.
- b. In Types E, and F Service Piping Systems: Insulate fittings, valves, and irregular surfaces 3 inch size and smaller with insulating cement covered with 4 oz or 6 oz canvas jacket as required by pipe size.
 - 1) Terminate pipe insulation adjacent to flanges and unions with insulating cement, trowelled down to pipe on a bevel.
- c. Fittings, Valves, Flanges, and Irregular Surfaces In Concealed Piping, Piping in Accessible Shafts, Attic Spaces, Crawl Spaces, Unfinished Rooms, Unfinished Spaces, and Tunnels: Sizing of canvas surface is not required.

3.06 INSTALLATION OF SHEET METAL JACKETING ON PIPING

- A. Secure jacketing to insulated piping with preformed aluminum snap straps and stainless steel strapping installed with special banding wrench.
- B. Jacket exposed insulated fittings, valves and flanges with mitred sections of aluminum jacketing.
 1. Seal joints with sealant and secure with preformed aluminum bands.
 2. Substitution: Factory fabricated, preformed, sectional aluminum fitting covers may be used in lieu of mitred sections of aluminum jacketing for covering fittings, valves and flanges.
 3. Substitution: Factory fabricated, preformed, sectional aluminum fitting covers or premolded polyvinylchloride fitting covers may be used in lieu of mitred sections of aluminum jacketing for covering fittings, valves and flanges.

3.08 FIELD QUALITY CONTROL

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- A. Field Samples: The Commissioner may at his discretion, take field samples of installed insulation for the purpose of checking materials and application. Reinsulate sample cut areas.

3.09 PIPING INSULATION SCHEDULE

- A. Insulate all cold service and hot service piping, and appurtenances except where otherwise specified.
- B. Schedule of Items Not to be Insulated:
1. Chrome plated piping, unless otherwise specified.
 2. Exposed piping in finished spaces, serving one fixture, or piece of equipment, and which connection from the main, branch, or riser, is 24 inches or less in length.
 3. Water heater blow-off piping.
 4. Air vents, pressure reducing valves, pilot lines, safety valves, relief valves.
 5. Water meters.
 6. Piping buried in the ground, unless otherwise specified herein.
 7. Items installed by others, unless otherwise specified herein.
 8. Sanitary drainage piping, unless otherwise specified herein.
 9. Mechanical equipment with factory applied steel jacket.
 10. Hot service piping 81 degrees F to 104 degrees F.
 11. Flanges and unions in Type E, F, and G service piping systems.
 12. Sprinkler and standpipe piping, unless otherwise specified.

3.10 COLD SERVICE INSULATION MATERIAL SCHEDULE

TYPE	SERVICE AND TEMPERATURES	INSULATION MATERIAL	PIPE SIZES (INCHES)	MINIMUM (NOMINAL) INSULATION THICKNESS (INCHES)
C	Fluids (except domestic cold water) 40 F to 80 F.	Fibrous Glass	1-1/2 & less	1
			Over 1-1/2	1-1/2
D	Domestic cold water, and as	Fibrous Glass	All Sizes	1/2

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TYPE	SERVICE AND TEMPERATURES	INSULATION MATERIAL	PIPE SIZES (INCHES)	MINIMUM (NOMINAL) INSULATION THICKNESS (INCHES)
	specified. 33 F to 80 F.			

A. NOTES:

1. Sprinkler and Standpipe Piping (First 10 feet connected to domestic water main within building): Insulate with same materials and thicknesses specified for domestic cold water.
2. Roof Drain Bodies Below Roof, Horizontal Conductor Piping Including Drops, and First Fitting on Vertical conductor: Insulate with same materials and thicknesses specified for domestic cold water.
3. Piping Serving Handicapped Accessible Lavatories:
 - a. Insulate exposed hot water supply and waste piping with flexible elastomeric foam pipe insulation.
 - b. Insulate exposed hot and cold water supply, and waste piping with under lav piping protection cover. Install fasteners thru each pair of holes in insulated safety wrap.

3.11 HOT SERVICE INSULATION MATERIAL SCHEDULE

	SERVICE AND TEMPERATURES	INSULATION MATERIAL	PIPE SIZES (INCHES)	MINIMUM (NOMINAL) INSULATION THICKNESS (INCHES)
E	Water and other fluids 105 F to 140 F.	Fibrous Glass	1-1/2 & Less Over 1-1/2	1 2
F	Water and other fluids 141 F to 250 F.	Fibrous Glass	6 & Less 8 & Up	2 2-1/2

3.12 SCHEDULE OF METAL JACKETING FOR INSULATED PIPE

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- A. Jacket exposed insulated risers with preformed sectional aluminum metal jacketing, in piping systems with service temperatures 105-450 degrees F, installed in finished rooms or finished spaces above Basement Floor Level.
 - 1. Exception: Preformed sectional aluminum metal jacketing is not required on piping in Mechanical Equipment Rooms, Steam Service Rooms, Penthouse, Mechanical Equipment Rooms and Machine Rooms.

- B. Install jacketing from floor to ceiling or from floor to first change of direction in riser, when such change in direction is a minimum of 9'-0" above finished floor, whichever is applicable.
 - 1. The aforementioned also applies to down feed piping systems.

- C. General:
 - 1. Jacket exposed insulated piping with preformed sectional aluminum metal pipe jacketing.

- D. Piping Exterior to Building: Jacket insulated piping with circumferentially corrugated aluminum jacketing.
 - 1. Lap longitudinal and circumferential joints a minimum of 2 inches.
 - 2. Secure jacketing in place with 1/2 inch x 0.020 inch thick aluminum bands secured with aluminum wing type seals, on maximum 12 inch centers.
 - 3. Cover insulated fittings, valves, and offsets with mitered sections of jacketing. Seal joints with mastic, and secure with aluminum strapping and wing seals.
 - 4. Factory fabricated, preformed fitting covers of same material as jacketing may be used instead of mitered jacketing.
 - 5. Install jacketing so as to avoid trapping condensation and precipitation.

END OF SECTION

SECTION 220800

CLEANING AND TESTING

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Testing Sprinkler System: NFPA-13.
- B. Testing Fire Standpipe System: NFPA-14.

1.02 SUBMITTALS

- A. Quality Control Submittals
 - 1. Test Reports (Field Tests): Submit data for each system tested, and/or disinfected; include date performed, description, and test results for each system.

1.03 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Perform factory testing of factory fabricated equipment in complete accordance with the agencies having jurisdiction.
 - 2. Perform field testing of piping systems in complete accordance with the local utilities and other agencies having jurisdiction and as specified.

1.04 PROJECT CONDITIONS

- A. Protection: During test Work, protect controls, gages and accessories which are not designed to withstand test pressures. Do not utilize permanently installed gages for field testing of systems.

1.05 SEQUENCING AND SCHEDULING

- A. Transmit written notification of proposed date and time of operational tests to the Commissioner at least 5 days in advance of such tests.
- B. Perform cleaning and testing Work in the presence of the Commissioner.

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- C. Pressure test piping systems inside buildings, at the roughing-in stage of installation, before piping is enclosed by construction Work, and at other times as directed. Perform test operations in sections as required and directed, to progress the Work in a satisfactory manner and not delay the general construction of the building. Valve or cap-off sections of piping to be tested, utilizing valves required to be installed in the permanent piping systems, or temporary valves or caps as required to perform the Work.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Test Equipment and Instruments: Type and kind as required for the particular system under test.
- B. Test Media (air, vacuum, water): As specified for the particular piping or system under test.
- C. Cleaning Agent (water): As specified for the particular piping, apparatus or system being cleaned.

PART 3 EXECUTION

3.01 PRELIMINARY WORK

- A. Thoroughly clean pipe and tubing prior to installation. During installation, prevent foreign matter from entering systems. Prevent if possible and remove stoppages or obstructions from piping and systems.

3.02 PRESSURE TESTS - PIPING

- A. Piping shall be tight under test and shall not show loss in pressure or visible leaks, during test operations or after the minimum duration of time as specified. Remove piping which is not tight under test; remake joints and repeat test until no leaks occur.
- B. Water Systems:
 - 1. Domestic water (potable cold, domestic hot and recirculation) inside buildings:

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- a. Before fixtures, faucets, trim and accessories are connected, perform hydrostatic test at 125 psig minimum for 4 hours.
 - b. After fixtures, faucets, trim and accessories are connected, perform hydrostatic retest at 75 psig for 4 hours.
- C. Gas Piping: Before backfilling or concealment perform air test of duration and pressure as required by the local gas company. However, for gas piping designed for pressures of from 4 inches to 6 inches water column, air test at 15 inches Hg for one hour, without drop in pressure. Test gas piping with air only. Check joints for leaks with soap suds.
- D. Drainage, Vent, Conductor and Roof Drain Piping (Inside Buildings): Perform tests before fixtures are installed. Test by filling the entire system with water, and allowing to stand for 3 hours, with no noticeable loss of water. Test joints under a minimum head of 10 feet of water, except the uppermost section. Test the uppermost section to overflowing.

3.03 TESTING OF EQUIPMENT, APPARATUS AND APPURTENANCES

- A. Relief Valves: Increase pressure in equipment or apparatus to relief valve setting, to test opening of valves at required relief pressures.

3.04 DISINFECTION OF POTABLE WATER SYSTEMS

- A. Disinfect potable water pipe and equipment installed in the Work of the Contract.
 1. Completely fill the piping, including water storage equipment if installed, with a water solution containing 50 mg/L available chlorine, and allow stand for 24 hours. Operate all valves during this period to assure their proper disinfection.
 2. After the retention period, discharge the solution to an approved waste and flush the system thoroughly with water until substantially all traces of chlorine are removed. Drain and flush water storage equipment if installed.

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- B. Connect plumbing fixtures and equipment and place the system into service. Prevent recontamination of the piping during this phase of the Work.

END OF SECTION

SECTION 221122

THERMOMETERS AND GAUGES

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Valves: Section 220523.

1.02 SUBMITTALS

- A. Product Data: Manufacturer's catalog sheets, specifications and installation instructions for each item specified.

1.03 QUALITY ASSURANCE

- A. Regulatory Requirements: Where Federal, NSF, ASME or other standards are indicated or required, products shall meet or exceed the standards established for material, quality, manufacture and performance.

PART 2 PRODUCTS

2.01 MANUFACTURERS/COMPANIES

- A. Dresser Instruments.
B. Marsh Bellofram.
C. Moeller Instrument Co.
D. Taylor Precision Products.
E. H.O. Trerice Co.
F. Weksler Instruments Corp.

2.02 THERMOMETERS

- A. General Design Features:
1. Scale Ranges: 1-1/2 times actual working temperature required for the particular application, as approved.
a. Maximum of two degrees between graduations and ten degrees between numerals.
b. When scale ranges are in excess of 100 degrees, maximum range between numerals

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- may be 20 degrees, or as otherwise approved for the particular application.
2. Direct Reading Thermometers: Bimetallic actuated, dial type, straight pattern, angle pattern, or adjustable angle pattern as required.
 3. Remote Reading Thermometers: Vapor tension actuated, or gas actuated type, with extension capillary tube of length as required for the particular application.
 - a. Case type as required for the particular mounting application.
 4. Thermometers for Sensing Liquid Temperature: Furnish with separable sockets.
 - a. Sockets for Use in Insulated Piping, Insulated Tanks or Similar Equipment: Extension lagging neck type, of length as required to compensate for insulation thickness, and proper immersion..

2.03 THERMOMETERS FOR MEASURING LIQUID TEMPERATURE

- A. Bimetallic Actuated Thermometers: Comply with ASME B40.3, Accuracy Grade A.
 1. Construction: Type 304 stainless steel, all welded construction, with clear acrylic plastic or shatterproof glass crystal.
 2. Dial: White enamel background with bold black figures and graduations.
 3. Head Size:
 - a. Installation in Piping: 3inch diameter.
 - b. Installation in Tanks and Similar Equipment: 5 inch diameter.
 3. Stem: Length as required for proper immersion, and to compensate for insulation thickness, with threaded connection for socket.
 4. External Calibration Device.
 5. Separable Socket:
 - a. Water Service: Brass or bronze.
- B. Vapor Tension or Gas Actuated Capillary Thermometers: Adjustable type, with micrometer type pointer or external calibration device, of design and materials as follows:
 1. Case and Ring: Stainless steel or non-ferrous material as approved, with clear acrylic or shatterproof glass lens. Provide case of type as required for the particular mounting application. Case adjustable, allowing rotation of 360°, and stem adjustment of at least 180°. Provide set screw for locking case in desired position.
 2. Movement: Brass with bronze bearings.
 3. Dial: White enamel background, with bold black graduations, numerals and pointer; 3-1/2 inch diameter.
 4. Capillary: Stainless steel.

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5. Bulb: Copper with union well connection.
6. Separable Socket:
 - a. Water Service: Brass or bronze.

2.04 PRESSURE AND COMPOUND GAUGES

- A. Type: Adjustable dial type with micrometer type pointer, or external calibration device, bronze bourdon tube, and bronze bushed rotary movement.
- B. Dial: White enameled background, and bold black graduations, numerals and pointer; 3-1/2 inch diameter.
 1. Scale Range:
 - a. Standard Gauges: Double normal operating pressure.
 - b. Compound Gauges: From 30" Hg vacuum to double normal operating pressure.
- C. Case: Cast aluminum, brass, or black finished phenolic.
- D. Accuracy: Guaranteed of within 1 percent in middle third of dial range.

2.05 PRESSURE SNUBBERS AND IMPULSE DAMPERS

- A. Pressure Snubbers: H.O. Trerice Co. Model 872.
- B. Impulse Dampers: H.O. Trerice Co. Model 870.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Thermometers:
 1. Install in accordance with the manufacturer's printed installation instructions.
 2. Install direct reading thermometers, when the application requires installation 6 feet or less above the floor or bottom of space in which installed, and remote reading type when the installation is over 6 feet.
- B. Pressure and Vacuum Gauges:
 1. Install in accordance with the manufacturer's printed installation instructions.
 2. For measuring liquid pressure, install gauges complete with stop cocks and drain cocks.
- C. Pressure Snubbers and Impulse Dampers:
 1. Install pressure snubbers in the piping connections to gauges installed in suction and discharge piping connections to close

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- coupled and base mounted circulating pumps driven by motors under 10 HP.
2. Install impulse dampers in the piping connections to gauges installed in suction and discharge piping connections to close coupled and base mounted circulating pumps driven by motors 10 HP and over.

END OF SECTION

SECTION 221123
GAS PIPING SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Extent of gas piping system work is indicated on Drawings and by the requirements of this Section.

1.02 SUBMITTALS

- A. Submit Shop Drawings indicating all operating pressures and catalog cuts for the following:
1. Gas piping materials
 2. Gas piping layout.
 3. Gas Safety Shut-Off Valves
 4. Gas Lubricated Plug Valves and Gas Cocks
 5. Strainers
 6. Pipe joint sealing materials
 7. Flanges and Gaskets
- B. Submit all the videotapes produced during the training. All tapes shall be labeled and turned over to the Commissioner within forty-eight (48) hours of training. Obtain receipt from the Commissioner that the tapes have been received.
- C. Submit copies of Certified Welder Qualifications. Submittal shall be made no less than seven (7) working days prior to commencement of work.
- D. Submit copies of the detailed procedure specification to be used for production welding in accordance with API 1104 Sample Procedure Specification Form.
- E. Submit a detailed schedule for the installation of gas piping and the welding thereof.

1.03 QUALITY ASSURANCE

- A. Comply with the rules and regulations of the Gas Company, New York City Building Department and with the latest regulations of the Administrative Code of the City of New York.
- B. When welding is to be performed as part of the work covered in this specification, the Contractor, before assigning any welder for this work, shall provide Commissioner

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Representative with the names of welders to be employed for this work. Welders installing gas piping at any pressure shall be qualified for all pipe sizes, wall thicknesses, and all positions in accordance with the latest editions of either API 1104 or ASME Section IX Boiler and Pressure Vessel Code and be re-qualified on an annual basis. Welding Special inspections will be conducted by certified inspector hired by City of New York under separate contract.

- C. All welding of gas piping shall be in full compliance with the latest editions of API 1104 and ASME Section IX Boiler and Pressure Vessel Code. Special inspection shall be performed in accordance with Section 406 of NYC Gas Code.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Gas piping shall be standard weight (Schedule 40) black steel pipe. Gas control, vent and relief piping shall also be standard weight, schedule 40 black steel pipe. Steel pipe shall be seamless or welded made in accordance with the Current Edition of the ASTM A53 Specification.
 - 1. In no case shall any gas pipe be less than 3/4". The sizes of pipe indicate nominal pipe size.
 - 2. Gas distribution piping for systems operating at 1/2 PSIG or less shall be in accordance with New York City Department of Buildings requirements and ANSI Z223.1-1974 (NFPA-54), National Fuel Code (as modified by the New York City Building Code).
 - 3. Gas distribution piping systems having a gas pressure above 1/2 PSIG shall conform to ANSI B31.2-1968, Fuel Gas Piping and requirements of the New York City Department of Buildings.
 - 4. Materials used in gas service and meter piping systems shall be in accordance with the requirements as specified by the gas utility company providing the services, and of the New York City Department of Buildings.
 - 5. Piping Joints for Gas Distribution Piping:
 - a. Piping at 1/2 psig (14" WC) and less:
 - 1) 4" and Smaller.....Screwed
 - 2) Over 4".....Welded
 - b. Piping over 1/2 psig (14" WC) to and including 3 psig:
 - 1) Under 4"Screwed
 - 2) 4" and Larger.....Welded

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- c. Portions of piping installed in concealed locations shall not have unions, tubing fittings, bushings, compression couplings or swing joints made by combination of fittings, and shall be welded regardless the size.
6. All welded gas distribution piping, less than or equal to 3 psig, shall be subject to special inspection. Special inspectors shall be retained by the Commissioner. In addition to independent pressure testing of the entire system, at least ten (10) percent of all welds, otherwise not required to be non-destructively tested, shall be subject to non-destructive testing (radiographed and/or subjected to ultrasonic testing). The minimum sampling shall be five (5) welds. All welds shall be radiographed at the Contractor's expense if any failure of any of the samples is found. Contractor shall make all necessary repairs at no cost to the City of New York.
7. Before any work is commenced on an item of construction requiring controlled inspection, all persons responsible for such controlled inspection shall be notified in writing at least seventy-two (72) hours prior to such commencement.

B. Fittings

1. Fittings for screwed gas piping shall be 150 lbs. black malleable iron fittings, conforming to ASTM A197, latest edition.
2. Compression type fittings and steel welding fittings shall be as specified and approved by the Gas Company.
3. Steel butt welding fittings shall conform to ANSI B16.9 requirements.
4. Fitting for control, vent and relief piping shall be 300 lb. black malleable iron screwed fittings conforming to ASTM A197, latest edition.

C. Flanges

1. All flanges shall be steel and compatible in type and pressure ratings with mating flange and shall comply with ANSI B16.5.
2. Flanges shall be welding neck or threaded end. Slip on flanges are not permitted.

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3. Where 150 pound steel flanges are bolted to Class 125 cast iron flanges, the raised face on the steel flange shall be removed.

D. Gaskets

1. Gaskets shall be compatible with the gas service on which they are used, without change to their chemical or physical properties.
2. Gasket shall be BLUE-GARD compressed asbestos free gaskets, style 3000 or GYLON gasketing style 3500, color: Fawn with Blue brand both as manufactured by Garlock Inc.
3. Gaskets of metal or metal-jackets, aluminum o-rings and spiral wound metal gaskets, or other materials, if approved by the Utility Company may be used.
4. Full face gaskets shall be used with all bronze and cast iron flanges.

E. Bolts and Nuts

Bolts and nuts shall be of best quality bolt steel with square head bolts and hexagon nuts with machine cut V-threads.

F. Thread joint sealant materials

Thread sealant to be used on natural gas piping shall be RectorSeal Corp No. 5, Oatey Great Blue pipe joint compound or approved equal. Thread sealant shall be a non-toxic, soft setting, slow drying sealant made from inert fillers. The joint sealant material shall not contain any Teflon. Teflon tapes shall not be used in natural gas lines. Teflon tapes are prone to tearing when pipes are being assembled and tightened and bits of torn tape can migrate into the fluid system, clogging valves, screens, and filters.

2.02 GAS SAFETY SHUT-OFF VALVES

- A. Gas safety shut-off valves shall be FM & UL listed, electric motor operated, normally closed, manual reset type. Valves shall be rising stem design with a straight through flow path with metal-to-metal seat and disc arrangement. The valve seat shall be stainless steel and the disc ductile iron. Valves shall be provided with a NEMA 4 enclosure modified for Class 1, Division II hazardous locations, be provided with an electrical terminal block and shall operate on 120 Volt, A.C., 60 Cycles, single phase. Valves shall meet ANSI Class

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VI leakage standard and shall be provided with a visual indicator to note the position of the valve whether "OPEN" or "SHUT".

- B. Gas safety shut-off valves 2" and smaller shall be threaded, 2 1/2" and larger shall be flanged. Flanged valves shall be provided with companion flange set by valve manufacturer.
- C. Gas safety shut-off valves shall be Maxon Corporation Series 808 for sizes 2" and smaller and Series 808-CP for valves 2-1/2" and larger. All valves shall be provided with trim package 1-1.

2.03 GAS LUBRICATED PLUG VALVES

- A. Lubricated plug valves for use on gas service shall be as approved by the Gas Company.
- B. Lubricated plug valves for use on gas distribution piping; mains, branches and base of risers shall be cast iron body, rated for 200 pounds cold working pressure and shall be wrench operated, except valves 10" and larger which shall be worm gear operated.
- C. Lubricated plug valves 2" and smaller shall be short pattern threaded; 2-1/2" and larger shall be regular pattern flanged.
- D. Lubricated plug valves shall be Nordstrom Valves Inc. Fig. 142 for sizes 2" and smaller, Fig. 115 for sizes 2-1/2" through 4" inclusive, Fig. 165 for sizes 6" and 8", and Fig. 169 for sizes 10" and larger; or Walworth Fig. 1796 for sizes 2" and smaller, Fig. 1700F for sizes 2-1/2" through 8", and Fig. 1707F for sizes 10" and larger.

2.04 GAS COCKS

- A. Gas cocks shall be for use only as manual gas shut-off valves at each piece of gas burning equipment; shall be of the plug type, bronze construction with check, nut and washer bottom and tee handle.
- B. Gas cocks shall be Fig. 10596 as manufactured by A. Y. Mc Donald Mfg. Co., or Series 52 as manufactured by Conbraco Industries Inc.
- C. Gas cocks shall only be used on piping 1" and smaller.

PART 3 - EXECUTION

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3.01 INSTALLATION

- A. Gas service and gas distribution piping, number and distribution of appliances, shall be installed as indicated on the Drawings and shall be in accordance with the rules and regulations of the Gas Company and according to the latest regulations of the Administrative Code of the City of New York and shall meet the requirement of the Department of Buildings.
 - 1. Contractor shall arrange for inspection and adjustment of all gas appliances of the contract, so that they will properly and safely operate with natural gas.
- B. Provide gas lubricated plug valves where specified, shown on Drawings or otherwise required for control of gas in the distribution piping; mains, branches and at the base of each riser. An accessible manual gas cock or lubricated plug valve of the same size as the pipe shall be installed at each piece of gas burning equipment, to allow for isolation of the equipment and where indicated on Drawings.
- C. Final connections to burner pilot lights and boiler gas trains shall be made by the Contractor.

3.02 GAS PIPING VENTING

- A. Gas service piping shall have vent and relief piping installed and sized in full accordance with the requirements of the serving utility.
- B. Gas train venting (Boilers and Water Heater):
 - 1. Gas vents from boilers shall not be combined with the water heater gas vents.
 - 2. Gas vents from one boiler shall not be manifolded to gas vents from other boilers.
 - 3. All normally open vent valves must be piped separately and directly to the outside.
 - 4. Vent piping from pilot system (firm gas) and main burner system (interruptible gas) cannot be combined.
 - 5. Gas vents from gas pressure regulator and high and low gas pressure switches can be manifolded.
 - 6. All gas vents shall be equipped with a utility approved weatherproof vent cap.
 - a. Vents shall terminate at least 10' laterally from any building opening, window, door or ventilation

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air intake duct. Vents shall terminate a minimum of 10' above grade.

- b. If the above is not possible due to the location of existing windows, then vents shall terminate a minimum of 18" above the parapet. Vents shall terminate at least 10' away from any chimney. Vents shall not be routed on the front façade of the building.
7. Vents outlets shall not be located under a window overhang projection.
 8. The size of the vent lines shall be as indicated on the Drawings. If the installation of the vent lines differ from the Drawings, the Contractor shall increase the size of the vents as directed by the Commissioner at no additional cost to the City of New York.

3.03 LABELING

- A. General Requirements: Gas piping operating at different pressures shall have labeling markers indicating operating pressure within that piping.
- B. All valves shall be suitably tagged to indicate the operating pressure level within the distribution piping.

END OF SECTION

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SECTION 221429

SUMP PUMP, SUBMERSIBLE

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Earthwork: Section 310000.
- B. Cast-In-Place Concrete: Section 033000.
- C. Painting: Section 099000.
- D. Valves: Section 220523.
- E. Raceways and Boxes for Electrical System: Section 260533.
- F. Motors Starters and Control Equipment: 262419.

1.02 SUBMITTALS

- A. Product Data:
 - 1. Catalog sheets, specifications, installation instructions, including pump capacity curve (capacity vs. head) and electrical schematics.
 - 2. Catalog sheets, specifications, and installation instructions for the sump basin and cover.
 - 3. Catalog sheets, specifications and installation instructions for the sump cover and sump frame.

PART 2 PRODUCTS

2.01 SUMP PUMP

- A. Type: Completely submersible, automatic operation, with a screenless suction, non-clog impeller, and lifting bail.
 - 1. Motor Requirements:
 - a. Equip submersible motor with built-in thermal overload protection.
 - b. Power Requirements: Design to operate on a single phase, 60 Hertz, 120 volt

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circuit (NEMA standard motor voltage 115 V).

- c. Power Cord: Waterproof, oil resistant, terminating with a 3 prong grounding type cord cap. Length as required.

B. Materials:

- 1. Casing, exterior covers and caps: Brass or bronze.
- 2. Impeller: Bronze.
- 3. Shaft: Steel, sealed against contact with moisture.
- 4. Exterior fasteners: Stainless steel.

- C. Liquid Temperature: Design to handle liquids up to 140 degrees F maximum.

2.02 PUMP CONTROLS AND ACCESSORIES

- A. Liquid Level Control Device: Construct of corrosion resistant materials, with components designed for installation within the sump completely waterproof, including oil resistant grounding type power cord.
- B. High Water & Oil Detection Alarm: Factory wired assembly as part of the control panel with high water alarm & high oil visual & audible alarm w/ contacts for connection to building automation system.
- C. Control Panel: Factory wired, housed in a NEMA-1 enclosure; alternator liquid level control actuated. Include motor controller, H-O-A switch, run light, and circuit breaker for each pump motor.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install the Work of this Section in accordance with the manufacturer's printed installation instructions unless otherwise specified.
- B. Install liquid level control device at proper elevation to produce specified sump drawdown. Secure control device to pump discharge pipe with

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clamps or to side of sump basin with corrosion resistant brackets and fasteners.

- C. High Water Alarm: Install high water alarm and make electrical connections. Install liquid level control device at proper elevation to activate alarm at specified liquid depth. Secure control device to pump discharge pipe with clamps or to side of sump basin with corrosion resistant brackets and fasteners.
- D. Control Panel: Install and make electrical connections. Install liquid level control devices at elevation required to produce specified sump drawdown. Secure control devices to pump discharge pipe with clamps, or to side of sump basin with corrosion resistant brackets and fasteners.

3.02 PUMP OPERATION

- A. Single Pump System: Set level controls to start pump when liquid depth in sump reaches 12 inches and stop pump when liquid depth is 6 inches.
- B. High Water Alarm Setting: Set control device to sound alarm when liquid depth in the sump reaches 16 inches.

3.03 FIELD QUALITY CONTROL

- A. Test sump pump system for proper operation at specified liquid depths.
- B. Test high water alarm for proper operation at specified liquid depth.

END OF SECTION

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SECTION 223301

DOMESTIC WATER HEATER

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Valves: Section 220523.
- B. Piping: Section 220410.

1.02 SUBMITTALS

- A. Product Data: Catalog sheets, specifications and installation instructions for each water heater, gas vent pipe, fittings, and accessories required for the vent system.
- B. Contract Closeout Submittals:
 - 1. Operation and Maintenance Data: Deliver 2 copies, covering the installed products, to the Commissioner.
 - 2. Warranty: Copy of specified warranty.

1.03 REGULATORY REQUIREMENTS

- A. Water heater shall bear the seal of the American Gas Association.
- B. Comply with the State Energy Conservation Construction Code.

1.04 WARRANTY

- A. Manufacturer's Warranty: Three year warranty for the glass lined water heater tank.

PART 2 PRODUCTS

2.01 WATER HEATER

- A. Tank: Welded steel, factory tested at 300 psi and rated for 150 psi working pressure.
 - 1. Glass lining permanently bonded to tank interior surface.
 - 2. Tank nipples factory installed.
 - 3. Renewable magnesium anode.
 - 4. Corrosion resistant dip tube.

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5. Drain and relief valve tapping.
 6. Renewable bronze boiler drain.
 7. Flue heat baffle.
 8. Draft hood.
- B. Burner: Aluminized steel or cast iron, adjustable, or self-adjusting air-gas mixture control.
- C. Thermostat: Automatic, adjustable, with automatic pilot, overheat control, and pilot operated automatic gas shut off.
- D. Outer Casing: Steel, with baked enamel or acrylic finish.
1. Access door for servicing controls and burner.
- E. Pressure-Temperature Relief Valve: AGA Z21.22; bronze body with stainless steel internals and threaded blow-off connection.

2.02 GAS VENT SYSTEM

- A. UL listed Type B vent.
- B. Construction: Double wall, comprised of galvanized steel outer casing and an aluminum alloy inner pipe separated by an air space; Metalbestos Type RV.
- C. Accessories: Connectors, increasers, flashing, storm collar, thimble and vent top shall be products of the vent pipe manufacturer.

2.03 GAS VENT PIPE

- A. 18 gage galvanized sheet steel with longitudinal groove type seam and slip fit joints with 4 inch engagement between sections.

2.04 MORTAR CEMENT

- A. High Temperature: Combustion Engineering, Super #3000; Harbison-Walker, Harwaco Bond; National Refractories (Kaiser), Trowleze.

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PART 3 EXECUTION

3.01 INSTALLATION

- A. Install the Work of this section in accordance with NFPA 54, NFPA 211, and the manufacturer's printed installation instructions, unless otherwise specified.

- B. Water Heater: Install heater on a level, firm base.
 - 1. Install the pressure - temperature relief valve in the dedicated tank tapping. Pipe relief valve blow-off to a point 6 inches above floor.
 - 2. Provide gate valves on hot and cold water connections and an AGA lubricated plug valve on the gas connection.
 - 3. Make final gas, and water piping connections with unions.

- C. Flue Vent Piping:
 - 1. Do not install vent piping within 12 inches of combustible materials.
 - 2. Secure each joint with 3 sheet metal screws.
 - 3. Support horizontal piping on 5 foot centers, maximum spacing.
 - 4. Cut flue opening into the masonry chimney. Install a standard weight steel pipe thimble into flue opening. Cement thimble into place with high temperature mortar.
 - 5. Seal vent pipe connection to thimble with high temperature mortar cement.
 - 6. Flush and fill tank; do not light burner until tank is full, and entrapped air is eliminated.

END OF SECTION

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SECTION 224200

PLUMBING FIXTURES

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Joint Sealers: Section 079200.

1.02 SUBMITTALS

- A. Product Data: Catalog sheets, specifications, roughing dimensions, and installation instructions for each item specified except fasteners.
1. Deliver cut out data for countertop fixtures to the Commissioner.
- B. Samples:
1. Water Closet Seat: One seat if other than product specified. Sample will be returned and if approved, may be installed on the Project.

1.03 QUALITY ASSURANCE

- A. Regulatory Requirements:
1. Comply with applicable requirements of FS WW-P-541, and the following standards:
 - a. ANSI/ASME A112.6.1M - Floor Affixed Supports for Off-the-Floor Plumbing Fixtures for Public Use.
 - b. ANSI/ASME A112.18.1M - Plumbing Fixture Fittings.
 - c. ANSI/ASME A112.19.1M - Enameled Cast Iron Plumbing Fixtures.
 - d. ANSI/ASME A112.19.2M - Vitreous China Plumbing Fixtures.
 - e. ANSI/ASME A112.19.6 - Hydraulic Requirements for Water Closets and Urinals.
 2. Materials and installations designated as handicapped accessible shall conform with the following:
 - a. ANSI A117.1 - Buildings and Facilities - Providing Accessibility and Usability for Physically Handicapped People.
 - b. The Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG), (Appendix A to 28 CFR Part 36).

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- c. The Uniform Federal Accessibility Standards (UFAS), (Appendix A to 41 CFR Part 101-19.6).
- 3. Each fixture carrier support shall be listed by model number in the fixture support manufacturer's Fixture Support Selection Guide as being recommended for support of the appropriate fixture.
- B. Plainly and permanently mark each fixture and fitting with the manufacturer's name or trade mark.
- C. Acid resistant surfaces shall be plainly and permanently marked with the manufacturer's label or symbol indicating acid resistance.

1.04 MAINTENANCE

- A. Special Tools: Deliver to the Commissioner.
 - 1. Furnish the following tools labeled with names and locations where used.
 - a. Keys for stops (furnished with stops).
 - b. Tools for Vandal Resistant Fasteners: Two for each type and size.

PART 2 PRODUCTS

2.01 MATERIALS - GENERAL

- A. Vitreous China: First quality, smooth, uniform color and texture, with fused on glaze covering surfaces exposed to view.
 - 1. Surfaces shall be free of chips, craze, warpage, cracks and discolorations. Surfaces in contact with walls or floors shall be flat, with warpage not to exceed 1/16 inch per foot.
 - 2. Color: White.
- B. Porcelain Enameled Cast Iron: Smooth, uniform color and texture, having fused on glaze covering surfaces exposed to view.
 - 1. Material shall show no cracks, chips, craze or discolorations.
 - 2. Enameled surfaces shall be acid resistant unless otherwise specified.
 - 3. Color: White.
- C. Fixture Trim: Brass, bronze, or stainless steel construction; consisting of supply and waste fittings, faucets, traps, stop valves,

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escutcheons, sink strainers, nipples, supplies, and metal trim.

1. Brass piping: Ips standard weight, with standard weight, 125 lb cast brass fittings.
 2. Brass tubing: 18 B & S gage.
 3. Stainless steel: 18-8 Type 302 or 304 unless otherwise specified.
- D. Fixture Trim Finishes:
1. Brass or Bronze: Polished or satin finished chrome plating, 0.02 mil chromium over 0.2 mil nickel plating.
 2. Stainless Steel: Invisible welds and seams, and unless otherwise specified, polished to No. 4 commercial finish.
- E. Fixture Hold-down Bolts: Steel, plated for corrosion resistance.
1. Cap nuts: Metal, polished and chrome plated.
- F. Combination Faucets: Faucets shall turn counter to each other for the on and off positions.
- G. Vandal Resistant Fasteners: Torx head with center pin.

2.02 P-1/1A WATER CLOSETS

- A. Fixtures: Vitreous china, full size, elongated bowl with integral flushing rim and jet; trapway at the rear and the outlet centered between a pair of hold down bolt holes.
1. Trapway size: Pass minimum ball of 2 inches.
 2. Trap seal: 2 inches minimum.
 3. Water surface area: 12 inches x 10 inches minimum.
 4. Provisions for flushing:
 - a. 1-1/2 inch spud for flush valve operation.
 5. Wall Supported Fixture Heights:
 - a. Standard Fixture: 14 to 15 inches from finished floor to rim.
 - b. Handicapped Accessible Fixture: 17 to 19 inches from finished floor to top of seat (15-13/16 to 17-13/16 inches from finished floor to top of rim based on 1-3/16 inch seat height).
 6. Water closet shall be Kohler K-4325, Crane Plumbing 3-446NS, American Standard 2257.001 or Mansfield Plumbing Products #1301

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- B. Operation: Fixture shall flush satisfactorily without extraordinary rise of water level in the bowl.
1. Maximum gallons of water per flush: 1.6 gallons.
- C. Closet Seat: Extra heavy duty, commercial design; Model 1655-C by Bemis Mfg. Co., Model No. 527-CH by Beneke Corp., or Model No. 9500C by Church Seat Co.
1. Material and Construction: Solid plastic, open front, less cover, molded in one piece with no joints, seams or crevices.
 2. The manufacturer's name shall be molded into the seat.
 3. Metal check hinges shall be integrally molded into the seat. Hinges, inserts, bearings and posts shall be of brass or stainless steel. Cover upper post and metal exposed above fixture rim with plastic to match seat.
 4. Surface shall be hard, polished, impervious to moisture, and not affected by the action of uric acid.
 5. Color: White.
- D. Water Closet Types:
1. P-1 Water Closet: Wall hung, back outlet, top spud inlet, siphon jet action, activated by means of an exposed flush valve.
- E. Closet Carrier (For Wall Hung Water Closets): Commercial type cast iron combination chair carrier and drainage fitting with the following:
1. Face Plate: Cast iron; height adjustable.
 2. Feet: Cast iron, adjustable, with provisions for bolting to the floor slab.
 3. Studs, Nuts and Washers: Steel, treated for corrosion resistance.
 4. Fixture Washers: Plastic.
 5. Adjustable Closet Connection: Cast iron, steel, or ABS plastic.
 6. Fitting Ends: Compatible with the drainage piping system.
 7. Gasket: Impregnated felt or neoprene closet gasket; lead or neoprene face plate gasket.
 8. Stud thread protectors.
 9. Factory painted.
 10. Trim: Polished chrome plated metal cap nuts and washers.
 11. Vandal Resistant Trim: Polished chrome plated metal cap nuts and washers retained with vandal resistant set screws.

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- F. Ferrous metal members of carriers and supporting devices with the exception of chrome plated or porcelain enameled cast iron, shall be factory painted for corrosion resistance.

2.03 P-2/2A LAVATORY

- A. Fixture: Vitreous china, unitized construction, straight front and sides, flat top graded to bowl, cast-in soap dish, anti-splash rim and front overflow; designed for concealed arm supports.
1. Dimensions: 20 inches long, 18 inches front to back, 3-1/2 inch front and side apron.
 2. 4 inch high integral back.
 3. Lavatory shall be American Standard 0954000020 with 0059020020 shroud/knee guard, Mansfield Plumbing Products #2040 complete with vitreous china shroud, Zurn Z5324-PED or Crane Plumbing Serena 179V. Provide with holes for concealed arm carrier systems. Color: white.
- B. Supply Fitting: Individual deck mounted self-closing faucets with the following features:
1. Maximum Flow: 0.5 gpm at 80 psi.
 - a. Exception: Metering faucets shall have a maximum flow of 0.25 gallons per cycle
 2. Over rim spout with aerator.
 3. Renewable operating units.
 4. Indexed operators.
 5. Vandal resistant assembly.
 6. 1/2 inch inlet, lock nut and coupling nut.
- C. Waste Fitting: 1-1/4 inch tailpiece with cast brass flat perforated strainer grate.
- D. Trap: Cast brass, non-adjustable P trap, 1-1/4 inch tubing inlet, 1-1/2 inch ips outlet.
1. Bottom cleanout plug.
 2. Ips brass nipple with solid cast brass escutcheon.
 3. Provide offset tailpiece for handicapped lavatory.
- E. Supplies: 3/8 inch ips brass with key operated stops and solid cast brass escutcheons.
1. Wall Supplies: Angle stops with keys.
 2. Floor Supplies: Straight stops with keys.

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- F. Faucet Hole Cover: Cast brass, rounded top, and threaded shank, with backing plate, lock washer and nut.
- G. Provide insulation on waste & supply piping under P-2A lavatory. McGuire or approved equal.
- I. Floor Mounted Carrier Supports: Steel pipe uprights, 1-1/4 inch ips minimum diameter, or 1 inch x 3 inch steel tubing uprights, with cast iron or welded steel feet, drilled for bolting to the floor construction. Each carrier shall be provided with the appropriate fixture supporting devices specified, or recommended by the carrier manufacturer's Fixture Support Selection Guide. : Ferrous metal members of carriers and supporting devices with the exception of chrome plated or porcelain enameled cast iron, shall be factory painted for corrosion resistance.
 - 1. Concealed Arms: Steel, with fixture locking lugs, leveling screws and a means of attaching, positioning and securing the fixture to the carrier.
 - a. Trim: Polished, chrome plated metal escutcheon to space fixture two inches from the wall.

2.05 P-3 URINALS

- A. Wall Supported Fixture: Vitreous china, with elongated rim, integral trap and extended side shields.
 - 1. Dimensions (approx.): 28 inches high, 18 inches wide, 12 inches front to back.
 - 2. Method of Support: Wall hangers and lugs for bearing plate bolting.
 - 3. Urinal shall be American Standard 6590.1250, Crane Plumbing 7399.10, Kohler K-4904-ET, Mansfield #422, Sloan Model SU-1000-0, Zurn Z5758.207.00 Contractor needs to exercise care when ordering flush valve as some urinals may not work with the flushometers
- B. Operation: Fixture shall flush satisfactorily with a maximum of one gallon of water and be accomplished without extraordinary rise in water level in the bowl.
- C. Fixture Types:

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1. P-3 Urinal: Wall supported, washout action, back outlet, and a 3/4 inch top spud inlet for an exposed flush valve connection.
- D. Floor Mounted Carrier Support (For Wall Hung Urinals): 1-1/4 inch ips steel pipe upright supports with block feet arranged with provisions for bolting to the floor slab, and with the following:
 1. Hanger Plate: Steel, height adjustable with provisions for mounting and positioning the fixture hanger.
 2. Bearing Plate: Steel, adjustable, with bearing studs, nuts and washers.
 3. Studs, Nuts and Washers: Steel, treated for corrosion resistance.
 4. Fixture Washers: Plastic.
 5. Stud thread protectors.
 6. Factory Painted.
 7. Trim: Polished chrome plated metal cap nuts and washers.
 8. Vandal Resistant Trim: Polished chrome plated metal cap nuts and washers retained with vandal resistant set screws.
- B. Ferrous metal members of carriers and supporting devices with the exception of chrome plated or porcelain enameled cast iron, shall be factory painted for corrosion resistance.

2.05 FLUSH VALVES

- A. Control Mechanism: Diaphragm or piston operated; do not intermix types.
- B. Maximum Flow Per Flush:
 1. Water Closet: 1.6 gallons.
 2. Urinal: 1.0 gallons.
- C. Flush Valve Assemblies: Flush valve, stop-check, tailpiece, vacuum breaker, and fixture spud coupling, including wall and spud flanges.
- D. Valve Materials:
 1. Valve Body: Brass or bronze.
 2. Valve Internal Parts: Corrosion resistant materials that will not be affected by the action of or contact with water.
- E. Operating Features:
 1. Valve operators shall employ the non hold-open feature.

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2. Piston type valves shall be field adjustable.
- F. Valve Operators:
1. Oscillating Handle: 4 inch brass spring loaded self return handle.
 2. Maximum Activation Force (Handicapped Accessible Operators): 5 lbf.
- G. Assembly Components:
1. Flush Pipe: Seamless brass tubing with integral vacuum breaker, No. 18 B & S gage.
 2. Fitting: Cast brass.
 3. Stop-Check: Brass or bronze body, non rising stem stop valve with a built-in automatic check.
 - a. Exposed Stop-Check: Screwdriver operated with protective cap.
 4. Spud Coupling and Wall Flanges: Cast brass.

PART 3 EXECUTION

3.01 FIXTURE SUPPORT AND SUPPORTING DEVICE INSTALLATION

- A. Wall Mounted Carrier Supports: Install the following fixtures on wall mounted carrier supports:
- C. Attach the following fixtures to the building wall construction:
- D. Fixture Supporting Devices: Attach fixtures by means of the following fixture supporting devices attached to carrier supports.

FIXTURE	SUPPORTING DEVICE
Lavatory, VC, with back	Concealed arms.
Water Closet	Bolt to comb. carrier and drainage fitting.
Urinal	Fixture hanger and bearing plate.

- F. Secure exposed external components in place with vandal resistant fasteners or devices which cannot be removed without the use of special tools.

3.02 FIXTURE INSTALLATION

- A. Install the Work of this section in accordance with the manufacturer's printed installation instructions.

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- B. Install fixtures level and at proper height, tighten connections, and install hold-down bolts, cap nuts and cover plates, where required.
- C. Secure exposed external components in place with vandal resistant fasteners or devices which cannot be removed without the use of special tools.
- I. Lavatories:
 - 1. Mount lavatories 31 inches from finished floor to rim unless otherwise specified.
 - 2. Mount handicapped accessible fixtures 34 inches from finished floor to rim. Refer to Standard Drawing No. 93/S3013 bound herein, for special clearances required for handicapped accessible fixtures.
 - 3. Caulk joint between fixture back and wall with Type 1D sealant; strike a neat joint.
- K. Water Closets:
 - 1. Wall Hung Fixtures:
 - a. Standard Fixtures: Install wall hung fixtures 15 inches from finished floor to rim unless otherwise specified.
 - b. Handicapped Accessible Fixtures: Install fixtures 18 inches from finished floor to top of seat (16-13/16 inches floor to rim based on 1-3/16 inches seat height).
 - c. Set bearing nuts to position fixture 1/16 inch clear of finished wall.
 - d. Caulk the joint between fixture back and wall with Type 1D sealant; strike a neat joint.
 - 2. After connections are tightened, install cap nuts and washers.
 - 3. Install water closet seats when directed.
- L. Urinals:
 - 1. Wall Hung Fixtures:
 - a. Standard Fixtures: Install wall hung fixtures 24 inches from finished floor to rim.
 - b. Handicapped Accessible Fixtures: Install wall hung handicapped accessible fixtures 14 inches (minimum) to 17 inches (maximum) from finished floor to rim.
 - c. Set bearing nuts on floor mounted carrier supports to position wall hung

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- fixtures 1/16 inch clear of finished wall.
- d. Caulk the joint between fixture back and wall with Type 1D sealant; strike a neat joint.
2. After connections are tightened, install cap nuts and washers.
- M. Flush Valves:
1. Standard Fixtures: Install flush valves on fixture centerline, and at following heights above fixture rim or back to centerline of water inlet to flush valve.
 - a. Water Closet: 11-1/2 inches.
 - b. Urinal: 11-1/2 inches.
 2. Handicapped Accessible Fixtures: Install flush valves on fixture centerline, and at following height above finished floor to centerline of flush valve operator. Distance between centerline of flush valve operator and centerline of water inlet is 1-1/2 inches.
 - a. Water Closet: Approximately 31-1/2 inches, and mounted on wide side of stall.
 - 1) Coordinate mounting height with Construction Work Contractor to avoid interference with grab bar, and to facilitate flush valve servicing.
 - b. Urinal: Maximum 44 inches.
 3. Set oscillating handles parallel to wall on exposed installation.
 4. Slip joints in flush pipe connections allowed only at fixture spud and vacuum breaker ends; others shall be screwed connections.
 5. Score tubing ends before assembling to assure tight slip joint connections. No score marks shall be visible after assembly.
 6. In utility corridors, solder screwed flush pipe connections.

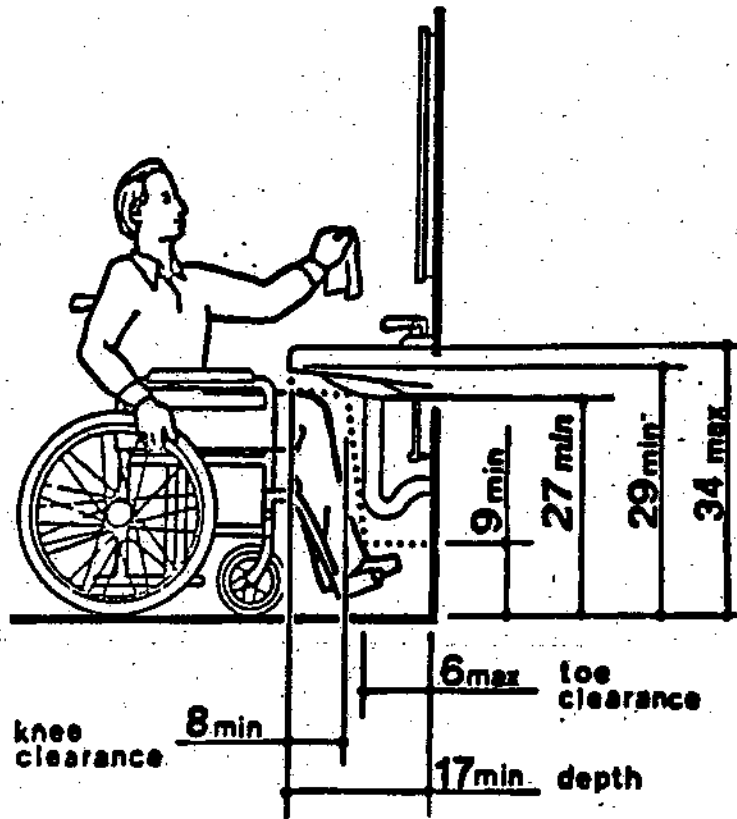
3.03 CLEANING, FLUSHING AND ADJUSTMENT

- A. Clean fixture and trim. Remove grease and dirt; polish surfaces but leave stickers and warning labels intact.
- B. Flush supply piping and traps; clean strainers.

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- C. Adjust stops for proper delivery.
- D. Adjust metering faucets for proper timing.

END OF SECTION



LAVATORIES

DIMENSIONS SHOWN IN INCHES

SHEET TITLE	DRAWN BY	APPROVED BY	ENG. NO.
DISABLED ACCESSIBLE FIXTURE CLEARANCES	G.W.D.		93/53013

SP-2

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SECTION 224453
PUMPS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide all electrical motor-driven pumps as indicated on the Drawings and as specified herein.

1.02 SUBMITTALS

- A. Manufacturer's installation and operation instructions, catalog sheets, specifications, and maintenance manuals for each item specified.
- B. Shop Drawings.
1. Cuts of each pump, indicating parts and materials.
 2. Motor data.
 3. Wiring Diagrams
- C. Submit a compliance affidavit, if all items in subparagraph B match contract documents. Manufacturer's technical product data submission will be required if a substitution is proposed.
- D. Certificates:
1. Certified pump test curves
- E. Maintenance data:
1. Spare parts
 2. Maintenance manual

1.03 QUALITY ASSURANCE

- A. Each pump control panel must have UL label and panel wiring shall comply with the latest New York City Electrical Code.

PART 2 - PRODUCTS

2.01 MOTORS

- A. Provide motors and motor starters in accordance and in compliance of the requirements of Section 262419: Motors and Controls.

2.02 PUMPS-GENERAL

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- A. The casing for pumps shall be of close-grained cast iron for bronze fitted pumps or bronze on all bronze pumps. The waterways must have large cross-section areas with smooth turns so that the water will pass through at a low velocity without shock. Suitable openings shall be provided for the suction gauge, discharge gauge, air vent and cock. Openings shall be tapped and plugged.
- B. Unless otherwise specified, the shaft shall be of the best grade of 18-8 stainless steel and of ample size to transmit safely the maximum amount of power required. Shaft shall be provided with ample keyway and key to accurately hold the impeller in place. The impeller shall be secured to the shaft using a nut and locking washer. The impeller shall be hydraulically balanced for all pressures and shall be of bronze, hand finished on the inside, machine turned and polished on the outside, dynamically balanced at all speeds, and with liberal keyway to fasten to shaft. Coupling shall be flanged and of the flexible type with pin and rubber bushing construction. That portion of the shaft passing through the pump casing and stuffing boxes shall be encased in a bronze sleeve, securely fastened to the shaft.
- C. A name-plate showing the serial number, discharge GPM and Head of each pump shall be attached to the respective pump. The necessary wiring and controlling devices will be furnished and installed complete under the Electrical Division, unless otherwise specified.

2.03 RE-CIRCULATING PUMP (DOMESTIC HOT WATER)

- A. Where indicated on Drawings, provide in hot water circulating piping inline re-circulating pump units with all connections as shown. Hot water circulating pumps shall be in-line bronze body, with mechanical seal and stainless pump shaft. Pump shall be Weil Pump Co., Thrust Co., or Bell and Gosset, Taco Pumps, Grundfos Pumps Corporation U.S.A or Armstrong Pumps Inc or approved equal.
- B. Capacity, head, model of pump and pump motor requirements shall be as shown on the Drawings or specified herein.
- C. Provide immersion type automatic electric control switches to control the operation of circulating pumps. The switches shall have bulb installed in a bulb well into the circulating line, and shall be arranged for conduit connection.
- D. Electric Control shall have an adjustable range from 40°F to 180°F., where temperature of water in storage tank is 140°F. Aquastat shall be a Honeywell L4006A with bulb assembly.

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- E. A fused motor switch and automatic starter providing overload and low voltage protection will be furnished and installed by Contractor, who will do all wiring required.
- F. Submit shop drawings of pump and motor for approval.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Pumps

- 1. Install all pumping apparatus as detailed on the Drawings, or as specified herein, or as recommended by the respective Manufacturer, to be completely operable for its intended use.
- 2. Make all required connections of pumps to the piping systems.

3.02 DEMONSTRATION

- A. The service of a factory trained representative shall be made available on the job site for start-up and for instructing the Custodian (or building manager) and staff in the operation and maintenance of each system installation.

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SECTION 230501

BASIC HEATING, VENTILATING AND AIR CONDITIONING REQUIREMENTS

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Provide labor, materials, tools, machinery, equipment, and services necessary to complete the HVAC Work under the Contract. All systems and equipment shall be complete in every aspect and all items of material, equipment and labor shall be provided for a fully operational system and ready for use. Coordinate the work with the work of the other trades in order to resolve all conflicts without impeding the job progress.

B. The Work includes but is not limited to the following systems, equipment and services:

Upgrade the existing HVAC systems by replacing four (4) of the existing packaged rooftop units, and partially modify air distribution system to accommodate the calculated load.

Provide two (2) split system air conditioning units serving the computer room and the elevator machine room.

Provide exhaust fan and associated ductwork serving elevator machine room.

Replace existing oil-fired heating boiler with a gas-fired hot water heating boiler, and provide all associated equipment included in the heating system, such as pumps, expansion tank, air separator, chemical feeder, associated pumps and control.

Provide an web based Building Management System (BMS) to control, monitor and/or alarm all the existing and new building systems.

C. Start-up services shall be included in the bid.

D. All systems, equipment and services specified herein shall be provided complete and ready for use.

1.02 RELATED WORK

A. General Conditions General Requirements

B. Division 26 Electrical Sections

1.03 SUBMITTALS

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- A. General: Unless indicated otherwise in the specific technical section, if a particular product specified in the technical section is being provided, manufacturer's qualifications and samples (except as listed below), are not required to be submitted. Manufacturer's product data, installation instructions, samples requiring color or texture approval, samples showing thickness and type of material, shop drawings, and calculations are to be submitted. Schedules, startup manuals, operation and maintenance manuals, and shop drawings are always required to be submitted.
- B. The following Submittals are required for all Sections of Division 23-Heating, Ventilating, and Air Conditioning. Specific "Supplemental Submittals" or additional information to that listed below that are required to be submitted are defined in each individual technical section.
1. Product Data: Submit manufacturer's product data for equipment including catalog sheets or cuts, specifications, capacity, performance charts, test data, materials, dimensions, weights, furnished specialties and accessories; and installation instructions. Submit start-up instructions where applicable.
 2. Shop Drawings: Submit manufacturer's shop drawings detailing equipment assemblies and indicating dimensions, weight, loadings, required clearances, method of field assembly, components, location and size of each field connection.
- C. Where indicated in the Supplemental Submittals of the technical sections, the following submittals are defined as follows:
1. Maintenance Data: Submit maintenance data and parts list. Include this data and the product data in the maintenance manual in accordance with the requirements of General Conditions.
 2. Test Report: Submit factory certified test results prior to shipping.
 3. Certificates: Submit written affidavit stating that the Contractor has started up and demonstrated (in the presence of the Commissioner) that the equipment is operating properly as designed.
- D. Piping, Ductwork, and Wiring Diagrams: Submit a complete wiring diagram, ductwork layout, and piping layout of all equipment. All parts of the installation shall be indicated exactly as installed and shall be properly identified. Valve identification numbers shall agree with valve tags of Section

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230553: HVAC Identification and all piping shall be clearly shown and labeled.

- E. Coordination Drawings: Provide complete coordination Drawings showing interface of all mechanical trades with the Architecture of the Building. All copies are to be signed. The Contractor is to keep a copy of the signed coordination drawing on the site.

1.04 QUALITY ASSURANCE

- A. Provide manufacturer's qualifications that indicate that the firms are regularly engaged in manufacture of equipment, of types, materials, and sizes required, whose products have been in satisfactory use in similar service for not less than 3 years.
- B. Codes and Standards: All equipment furnished and installed shall meet or exceed the referenced Standards and Codes in all respects - installation, performance, etc.

References and industry standards listed herein and in other HVAC Sections are applicable to the Work specified in the Section. Unless more restrictive criteria is explicitly called-out for in other HVAC Specifications or mandated by the Building Code, the requirements described in the referenced standards below shall be deemed applicable to the Work. This includes language in the documents in the form of a recommendation or suggestion, which shall be deemed as mandatory.

1. NFPA
2. NYC CONSTRUCTION CODES (including Building Code BC, Mechanical Code MC and Fuel Gas Code FGC)
3. ASHRAE
4. SMACNA
5. ELECTRICAL IEEE STANDARDS
6. STATE DEC REGULATIONS
7. NYCDEP DEPARTMENT OF AIR RESOURCES CRITERIA
8. ASME
9. ANSI
10. NY INDUSTRIAL CODE RULE 4
11. ABMA
12. UL
13. LOCAL LAWS
14. NCPWB
15. FCI
16. EJMA
17. MSS
18. ABMA
19. IRI

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- 20.OTCR NYC Office of Technical Certification and Research
- 21.AABC
- 22.NEBB
- 23.ARI
- 24.AMCA
- 25.ADC
- 26.NEMA
- 27.NEC
- 28.ASTM
- 29.FCI
- 30.USGB LEED Green Building Rating System

All appliances regulated by the New York City Construction Codes shall be listed and labeled (reference MC 301.4, MC 301.6). Testing of material and equipment shall be in accordance with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department (MEA) before the effective date of the NYC Construction Codes may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.

1.05 ACCESSIBILITY

- A. Install access for servicing and maintenance. Coordinate the final location of concealed equipment and devices requiring access with final location of access panels and doors. Allow ample space for removal of all parts that require replacement or servicing.
- B. Extend all grease fittings to an accessible location.
- C. Door shall permit full access to the equipment.

1.06 ROUGHING-IN

- A. Verify final locations for roughing work with field measurements and with the requirements of the actual equipment being connected. Coordinate with General Construction drawings.

1.07 MECHANICAL INSTALLATIONS

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- A. Coordinate HVAC equipment and materials installation with other building components.
- B. Verify all dimensions by field measurements.
- C. Arrange for chases, slots, and openings in other building components to allow for HVAC installations.
- D. Coordinate the installation of required supporting devices and size of sleeves to be set in poured concrete and other structural components as they are constructed.
- E. Sequence, coordinate, and integrate installations of HVAC materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning and entrance prior to the close of the building.
- F. Coordinate the cutting and patching of building components to accommodate the installation of HVAC equipment and materials.
- G. Where mounting heights are not detailed or dimensioned, install HVAC services and overhead equipment to provide the maximum headroom possible.
- H. Install HVAC equipment to facilitate maintenance and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting and minimum of interference with other installations.
- I. Coordinate the installation of HVAC materials and equipment above ceilings with suspension system, light fixtures, and all other installations and accessories.
- J. Provide all rigging, disassembly and reassembly of equipment including the furnishing and installation of dunnage and all other required and necessary accessories.

1.08 COORDINATION DRAWINGS

- A. Provide coordination drawings. Coordination drawings shall be completed in accordance with the CPM Schedule so as not to delay the progress of the Project, for example, the installation of any floor slab in which the placing of mechanical equipment (sleeves, inserts, conduits, and all other accessory items) is involved.

1.09 CUTTING AND PATCHING

- A. Do not endanger or damage installed Work through procedures and processes of cutting and patching.

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- B. Arrange for repairs required to restore the work, because of damage caused as a result of HVAC installations.
- C. No additional compensation will be authorized for cutting and patching Work that is necessitated by defective or non-conforming installations.
- D. Perform cutting, fitting, and patching of HVAC equipment and materials required to:
 - 1. Remove and replace defective work.
 - 2. Remove and replace work not conforming to requirements of the Contract Documents.
 - 3. Remove samples of installed work as specified for testing.
 - 4. Install equipment and materials in existing structures.
 - 5. Cut, remove and legally dispose of selected HVAC equipment, components, and materials as indicated, including, but not limited to removal of HVAC piping, heating units and trim and other HVAC items made obsolete by the new work.
 - 6. Protect the structure, furnishings, finishes, and adjacent materials not indicated or scheduled to be removed.
- E. Locate identify, and protect HVAC services passing through remodeling or demolition area and serving other areas required to be maintained operational. When transit services must be interrupted, provide temporary services for the affected areas.

1.10 MATERIALS

- A. Refer to General Conditions for requirements. The following paragraph supplements this Section.

In addition, since manufacturing methods vary, reasonable minor variations are expected; however, performance and material requirements are the minimum standards acceptable.

1.11 EQUIPMENT NOISE AND VIBRATION

- A. It is contractor's responsibility to control equipment noise and vibration to comply with NYC Local Law 113 and NYC Mechanical Code Section MC 926:

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1. For equipment which has no sound power ratings scheduled on the plans, the contractor shall select equipment such that the fore-going noise criteria, local ordinance noise levels, and OSHA requirements are not exceeded. Selection procedure shall be in accordance with ASHRAE Fundamentals Handbook, Chapter 7, Sound and Vibration.
 2. Contractor shall perform testing/reporting to establish ambient baseline noise level (ambient, directional) of new outdoor equipment after completion of installation. Noise level testing, manufacturer's equipment operation performance documentation and proposed supplementary noise control measures shall be submitted to Consultant for review/approval.
- B. The vibration shall not be apparent in occupied areas of the building. Both the balancing of rotating machinery and the installation of vibration isolation at various locations are required. Provide as detailed in Specification Section 230549, Vibration Isolation.
- C. Obtain equipment that is quiet in operation as compared to other available equipment of its size, capacity, and type; install equipment so that a minimum amount of noise and/or vibration is transmitted to the building; and fabricate the duct system so that air noises generated in the system are held to an absolute minimum.
- D. Precautions deemed necessary to provide a quiet installation shall be done as part of the Work of this Project. After the system is in operation, make changes to equipment or Work installed so that the noise criteria defined in the New York City Construction Code (including Mechanical Code MC 926), New York City DEP Noise Code are adhered to:

<u>Location</u>	<u>Noise Criteria Standard (NC)</u>
Reading Areas	30-40
Conference Room	25-35
Private Offices	25-35
Lounge	35-40
Toilets	45-50

- E. Adjust all the equipment RPM, noise production and vibration in order to avoid any production of resonance in any system.

1.12 EQUIPMENT GUARDS

- A. Provide easily removable expanded metal guards for all belts, couplings, exposed fan inlets and outlets, and other moving parts of machinery. Provide tachometer openings in the guards at least 2" in diameter, for all belt-driven or

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variable speed machinery. Equipment guards shall comply with OSHA requirements.

- B. Guards shall be provided where appliances, equipment, fans or other components that require service are located within 10 feet of a roof edge or open side of a walking surface and such edge or open side is located more than 30 inches above the floor, roof or grade below. The guard shall extend not less than 30 inches beyond each end of such appliances, equipment, fan or component and the top of the guard shall be located not less than 42 inches above the elevated surface adjacent to the guard. The guard shall be constructed so as to prevent the passage of a 21-inch-diameter sphere and shall comply with the loading requirements for guards specified in the New York City Building Code. (Refer to BC 1012, FGC 306.6, MC 304.10).

1.13 ELECTRICAL CHANGES TO MECHANICAL EQUIPMENT

- A. If any changes made in equipment submitted are approved especially as to the sizes of the motors, contractor shall coordinate.

1.14 DELIVERY, STORAGE, AND HANDLING

- A. Handle equipment carefully to prevent damage, breaking, denting, and scoring. Do not install damaged units or components; replace with new.
- B. Store equipment in clean dry place. Protect from weather, dirt, fumes, water, construction debris, and physical damage.
- C. Comply with manufacturer's rigging and installation instructions for unloading equipment, and moving them to final location.

1.15 GUARANTEES, WARRANTIES, BONDS, AND MAINTENANCE CONTROL

- A. Refer to General Conditions for procedures and submittal requirements for warranties. Refer to individual equipment specifications for warranty requirements.
 - 1. Compile and assemble the warranties specified for HVAC work into a separated set of documents, tabulated and indexed for easy reference.
 - 2. Provide complete warranty information for each item to include product or equipment including duration of warranty or bond; and names, addresses, and telephone numbers and procedures for filing a claim and obtaining warranty services.

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3. Unless otherwise noted in the specific sections, warranties for the equipment, workmanship and materials shall be provided for the period of one year. Exceptions include, but are not limited to, the five (5) year warranty provided for the refrigeration compressors and rooftop heating furnace and cooling coils.
4. Manufacturers', not Contractors' warranties, shall be provided for all HVAC equipment and accessories.
5. All warranties are to start from the date of Substantial Completion.

1.16 OPERATIONS, TRAINING, AND MANUAL

- A. Refer to General Conditions for procedures and requirements for preparation and submittal of operation and maintenance manuals of each HVAC equipment. Refer to individual equipment specifications for maintenance manual additional requirements. In addition, include the following information:
 1. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of all replaceable parts.
 2. Manufacturer's printed operating procedures to include start-up, break-in, routine and normal operating instructions; regulation, control, stopping, shut-down, and emergency instructions; and summer and winter operating instructions.
 3. Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassemble; aligning and adjusting instructions.
 4. Servicing instructions and lubrication charts and schedules.
- B. Bind all the other Sections maintenance manuals in a single final Operating and Maintenance Manual with the requirements of General Conditions.
- B. Refer to General Conditions for procedures and requirements for training on each HVAC equipment. Refer to individual equipment specifications for the additional training requirements.

1.17 PAINTING

- A. Paints and coatings used in the interior of the building to

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cover insulation for identification purposes shall not:

1. Exceed the VOC content limits established in the Green Seal Standard GS-11 Paints, First Edition, May 20, 1993.
- B. Paints and coatings used in the interior of buildings to mark piping for identification purposes shall not:
1. Exceed the VOC content limits established in the Green Seal Standard GS-11 Paints, First Edition, May 20, 1993.
 2. Exceed the VOC content limit of 250 g/l established in the Green Seal Standard GC-03, Anti-Corrosive Paints, Second Edition, January 7, 1997.
- C. All adhesives and sealants shall comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168; VOC limits shall comply with the limits indicated in Table 1 of LEED version 2.2, Indoor Environmental Quality Section, Credit EQ-4.1. Those limits correspond to an effective date of the SCAQMD Rule #1168 of July 1, 2005 and Rule Amendment date of January 7, 2005.
- D. Refer to Section 099000: Painting, for materials and method of application, and follow all the requirements specified in the Section.
- E. Painting Schedule
1. No on-site painting is required on the following items unless specifically indicated otherwise:
 - a. Concealed metal and piping.
 - b. Chromium plated piping and chromium plated metal.
 - c. Stainless steel sheet metal.
 - d. Stainless steel piping.
 - e. Piping or ductwork to be insulated.
 - f. Insulation on piping or ductwork in unfinished spaces or concealed.
 - g. Insulated piping covered with stainless steel, aluminum, polyvinyl chloride, or all service jacketing, unless otherwise specified.
 - i. Mechanical equipment with a factory applied baked-on enamel finish, not specified to be insulated or provided with an enameled steel insulated jacket.

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- j. Insulated equipment noted on the Drawings to be covered with stainless steel or aluminum sheet metal jacketing or insulated cement finish.
- k. Factory fabricated double wall insulated metal vents.

2. Paint the following:

- a. Un-insulated Black Steel Piping:
 - 1) Exposed in Finished Rooms or Finished Spaces: 1 coat of primer and 2 coats of latex semi-gloss enamel.
 - 2) Exposed in Unfinished Rooms, or Unfinished Spaces, or in Pipe Shafts: 1 coat of primer and 2 coats of finish.
 - 3) Exposed Exterior to a Building: 1 coat of primer and 2 coats of exterior acrylic latex semi-gloss enamel.
- b. Un-insulated Galvanized, Cast Iron, Brass or Copper Piping:
 - 1) Exposed in Finished Rooms or Finished Spaces: 1 coat of primer and 2 coats of latex semi-gloss enamel.
 - 2) Exposed Exterior to a Building: 1 coat of primer and 2 coats of exterior acrylic latex semi-gloss enamel.
 - 3) Exposed in Unfinished Rooms or Unfinished Spaces: 1 coat of primer and 2 coats of finish.
- c. Jacketing on Insulated Piping: exposed, in Finished Rooms or Finished Spaces: 2 coats of latex semi-gloss enamel. No primer required.
- d. Jacketing on Insulated Equipment:
 - 1) For Below Ambient Temperatures, Exposed in Finished Rooms or Finished Spaces: 2 coats of latex semi-gloss enamel. No primer required.
 - 2) For Above Ambient Temperatures, Exposed in Finished Rooms or Finished Spaces: 1 coat of varnish size (FS TT-P-56B) primer and 2 coats of latex semi-gloss enamel.
- e. Flexible Foamed Plastic Insulation on Piping, Ductwork and Equipment:

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- 1) Exposed in Finished Rooms or Finished Spaces: 2 coats of Armstrong Armaflex Finish. No primer required.
 - 2) Exposed Exterior to a Building: 2 coats of Armstrong Armaflex Finish. No primer required.
- f. Piping in floor trenches after fabrication: primer and finish.
- g. Un-insulated Mechanical Equipment: furnished with a factory applied prime coat finish: 2 coats of acrylic latex semi-gloss enamel. No primer required.
- h. Vessels, Tanks, and Like Equipment Specified to be insulated: 1 coat of corrosion resistant paint, prior to the application of insulation.
- i. Un-insulated Exposed Iron and Steel Surfaces of Boilers, Including the Steel Casing, Buck Stays, Boiler Fronts, Castings, and the Exposed Surfaces of all Other Iron or Steel Installed in Conjunction with Boiler Work: 1 coat of primer and 2 coats of heat resistant enamel.
- j. Insulation Finish on Field Fabricated Boiler Smoke Breeching: 1 coat of varnish size (FS TT-P-56B) and 2 coats of latex semi-gloss enamel.
- k. Hangers, Supports, Restraints and Accessories:
- 1) Exposed: Paint to match adjacent piping, pipe insulation or ductwork insulation.
 - 2) All black steel or iron pipe hangers, rods, inserts, brackets, restraints, and accessories for supporting piping systems and duct systems: 1 coat of primer and 2 coats of latex semi-gloss enamel. Paint black steel hanger rods, threaded on the job site, with a primer immediately after installation.
 - 3) Metal Fabrications in Finished Spaces: Paint over shop coat with 2 coats of alkyd gloss enamel.
- l. Sheet Metal Work:
- 1) Exposed Black Iron, Galvanized Iron, and Aluminum, including Hangers for Insulated and Un-insulated Ductwork, in Finished Rooms, Finished Spaces or Exterior to a Building: 1 coat of primer and 2 coats of latex semi-gloss enamel.

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2) Jacketing on Exposed Insulated Ductwork in Finished Rooms and Finished Spaces: 2 coats of latex semi-gloss enamel. No primer required.

m. Un-insulated Exposed Valves, Flanges, Unions and Irregular Surfaces in Piping Systems Installed in Finished Rooms or Finished Spaces: 1 coat of primer and 1 coat of black heat resistant enamel.

F. Color Coding:

1. Apply finish paints of colors indicated opposite the various items listed below where such items are installed in Mechanical Equipment Rooms, Machine Rooms, Boiler Rooms, and Penthouse Mechanical Equipment Rooms:

Piping, Exposed - Bare and Insulated on Unfinished Spaces and Rooms:

Refrigerants	Green
Water - Boiler Make Up	Light Green
Water - Unsafe	Yellow

2. Piping Not Listed Above: Color code by classification as follows:

Dangerous Materials	Yellow or Orange
Safe Materials	Green
Valuable Materials	Purple

3. Ductwork: Grey.

4. Equipment - Bare and Insulated (Except Factory Painted): Gray.

1.18 ADJUSTING AND CLEANING

A. Refer to General Conditions for general requirements for final cleaning.

B. Alignment: Check alignment, and where necessary, realign equipment within recommended tolerances by the manufacturer and in presence of manufacturer's service representative and the Commissioner.

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1.19 TORCH BURNING OPERATION

- A. The storing and use of oxygen and combustible gases in conjunction with torch burning apparatus is subject to the Rules and Regulations of the Division of Fire Prevention of the Fire Department of the City of New York, latest Fire Prevention (F.P.) Directive. Fire watches shall be provided during all operations using torches for burning, cutting or welding.
- B. Contractor shall apply for and obtain permits for the use and storage of such equipment on school premises. The operator of such equipment shall have a certificate of fitness issued by the Fire Department.
- C. The cost of permits, certificates, fire watches, apparatus and other items required in the torch burning operation shall be borne by the Contractor at no additional cost to the City of New York.

1.20 SPECIAL INSPECTIONS/TESTS

- A. The following Special Inspections are required by the NYC Building Code for the HVAC Trade:

<u>Item</u>	<u>Code Section</u>
Mechanical Systems	BC 1704.15
Heating Systems	BC 1704.23
Chimneys	BC 1704.24

- B. The following Periodic Special Inspections are required by the NYC Building Code for HVAC Systems:

<u>Item</u>	<u>Code Section</u>
Fire Dampers	BC 109.3.4
Energy Code Compliance	BC 109.3.5
Through-penetration Firestop Systems	BC 1704.25

- C. Tests of Mechanical Systems shall be performed in accordance with the following Sections of the New York City Mechanical Code:

<u>Item</u>	<u>Code Section</u>
Chimneys	MC 810
Noise Control	MC 926
Boilers and Pressure Vessels	MC 1011
Refrigeration Systems	MC 1108
Hydronic Piping Systems	MC 1208

- D. Special and periodic inspections shall be performed by Special Inspectors hired by City of New York. All tests shall

be witnessed by Special Inspectors.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine areas and conditions under which equipment is to be installed. Do not proceed with work until conditions are suitable.

3.02 INSTALLATION

- A. Install equipment in accordance with manufacturer's installation instructions. Install units plumb and level, firmly anchored in locations indicated, and maintain manufacturer's recommended clearances.
- B. Support: Install equipment on 4" high concrete pad when installed on floor, with vibration isolators and restraints as required.
- C. Accessories: Install equipment accessories not installed at factory and shown on the Drawings.
- D. Connections: Connect all equipment and accessories as recommended by manufacturer for a complete installation.
- E. Contractor shall not leave sharp exposed metal edges (bottom of threaded rods, mechanical equipment supports, etc.) that could otherwise present safety hazards to the building's occupants/work staff.
- F. **Access and service space shall be per MC 306.1 - Clearances for maintenance and replacement:** Clearances around appliances to elements of permanent construction, including other installed equipment and appliances, shall be sufficient to allow inspection, service, repair or replacement without removing such elements of permanent construction or disabling the function of a required fire-resistance-rated assembly.

3.03 ADJUSTING AND CLEANING

- A. Cleaning: Clean factory-finished surfaces. Repair any marred or scratched surfaces with manufacturer's touch-up paint.

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3.04 SPARE PARTS

- A. Provide a set of spare parts that may be normally required, such as belts, filters, etc. that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

3.05 TESTING

- A. The Contractor shall furnish energy, fuel, oil, water, air, light and electrical instruments as required for all testing. Reference Section 230593, Cleaning and Testing.

END OF SECTION

SECTION 230503
HVAC PIPING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide pipes, pipe fittings, pipe specialties, and pipe supports as shown on the Drawings, and as needed for a complete and proper installation. Product specific requirements are contained herein; Section 230501, Basic HVAC Requirements, shall be referred to for general requirements.

1.02 DESIGN AND PERFORMANCE REQUIREMENTS

A. Heating Hot Water Piping

Operating Pressure	125 psig
Operating Temperature	150° - 250° F
Design Code (ANSI)	B31.9

B. Refrigerant Piping

Operating Pressure	150 psig
Operating Temperature	40° - 120° F
Design Code (ANSI)	B31.5

1.03 RELATED SECTIONS

- A. Division 23 Sections

1.04 SUPPLEMENTAL SUBMITTALS

- A. Shop Drawings: Submit schedule showing pipe or tube weight, fitting and joint type for each piping system; size, location and feature for each piping specialty, hanger and support.
- B. Welding Certifications: Submit reports as required for piping work.
- C. Brazing Certifications: Submit reports as required for piping work.

1.05 SUPPLEMENTAL QUALITY ASSURANCE

A. Codes and Standards

1. Welding: Qualify welding procedures, welders and operators in accordance with ASME B31.1, or ASME B31.9, as applicable, for shop and project site

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welding of piping work and ASME Boiler and Pressure Vessel Code, Section IX, Part QW Welding.

2. Certify welding of piping work using Standard Procedure Specifications by, and welders tested under supervision of, National Certified Pipe Welding Bureau (NCPWB).
3. Brazing: Certify brazing procedures, brazers, and operations in accordance with ASME Boiler and Pressure Vessel Code, Section IX, Part QB Brazing for shop and job-site brazing of piping work.
4. Fluid Control Institute (FCI) Compliance: Test and rate "Y" type strainers in accordance with FCI 73-1: Pressure Rating Standard for "Y" Type Strainers. Test and rate other type strainers in accordance with FCI 78-1: Pressure Rating Standard for Pipeline Strainers Other than "Y" Type.
5. Manufacturers Standardization Society of The Valve and Fittings Industry (MSS) Compliance: Comply with:
MSS SP-58 Pipe Hangers and Supports - Materials, Design and Manufacture.
MSS SP-69 Pipe Hangers and Supports - Selection and Application.
MSS SP-89 Pipe Hangers and Supports - Fabrication and Installation Practices.

Piping shall be supported at distances not exceeding the spacing specified in MC Table 305.4 or in accordance with the above MSS standards.

6. New York City Construction Code: Comply with the New York City Building Code, Mechanical Code, Fuel Gas Code, Plumbing Code and Fire Code.
7. Testing of material and equipment shall be in accordance with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department (MEA) before the effective date of the NYC Construction Codes

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may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.

PART 2 - PRODUCTS

2.01 PIPES

A. Pipe used shall be free from scale or rust. Each length of pipe shall be properly marked at the mill for proper identification with name or symbol of manufacturer. Dimensions for steel pipe shall be in accordance with the ANSI B36.10.

B. Steel Pipe

1. Black or Galvanized; Standard Weight: Schedule 40
 - a. Steel Pipe for Threading: Type F, E or S, ASTM A53; ASTM A135 or A106.
 - b. Bending, Coiling, and Flanging: ASTM A53, Grade A, Type E or S, ASTM A135 or ASTM A106.
 - c. Grooved End Type: Schedule 40, ASTM A53 Grade A, Type F for sizes 3/4" to 1-1/2", and ASTM A53 Grade B Type E or ASTM A53 Grade B Type S for sizes 2" to 24"; or ASTM A135 or ASTM A106.

2. Steel pipe shall be manufactured by:

Koppel Steel Corp.
North Star Steel Co.
U.S. Steel Co.
Or approved equal.

D. Copper Tubing

1. Hard-Drawn Temper, Water Tube Type L: ASTM B88.
Refrigerant Piping: ACR Tube: ASTM B280.
Other refrigerant pipe and tubing options are as defined in MC 1107.4

2. Copper tubing shall be manufactured by:

Mueller Industries
NIBCO Inc.
Phelps-Dodge Copper Products Corp.
Or approved equal.

2.02 FITTINGS

A. Steel, Malleable/Cast Iron

1. Steel Fittings, except couplings and unions, 2-1/2" and less: Threaded pattern, standard weight, black cast iron.
2. Flanges, Welding Neck Type, Same Pressure Rating as Adjoining Pipe: ANSI/ASME B16.5. Welding flanges shall be socket type.
3. Weld Fittings, Carbon Steel: Butt Welding Type: ANSI/ASME B16.9: Allied Piping Products Co., Inc.'s Branchlets, Type 1 or 2 or Bonney Forge Corp.'s Weldolets; Socket Welding Type: ANSI/ASME B16.11 Allied Piping Products Co., Inc.'s Branchlets, Type 1 or 2 or Bonney Forge Corp.'s Thredolets or Sockolets.
4. Grooved End Type: Steel: Ductile iron, ASTM A536 Grade 65-45-12; Malleable Iron: ASTM A47.
5. Malleable Iron, Steam Pattern Threaded: ANSI/ASME B16.3 for 150 lb Class and 300 lb Class.
6. Cast Iron, Steam Pattern Threaded: ANSI/ASME B16.4, Flanged Fittings and Threaded Flanges: ANSI/ASME B16.1 for standard weight pipe: Class 125 and for extra heavy weight pipe: Class 250.
8. Steel and malleable/cast iron pipe fittings shall be manufactured by:

Tube-Line.
Victaulic Co. of America.
TYCO Grinnell Mechanical Products.
Or approved equal.

B. Brass

1. Malleable brass, threaded pattern; flanges, brass for use in brass pipe or copper tubing systems: Flanges shall conform to the Standards for fittings used in the systems. Brazing Flanges, With or Without Pre-inserted Rings of Brazing Alloy: ASME B16.15, with hubs modified for brazing ends. Brass fittings shall conform to ASTM F 1974 per MC Table 1202.5.
2. Brass Fitting shall be manufactured by:

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Mueller Industries
NIBCO Inc.
Smith-Cooper International.
Or approved equal.

C. Unions 3" Size and Under: Steel: malleable iron, 300 lb class, with brass to iron or brass to brass seats and bronze to bronze, bronze to iron, or brass to iron ground joint, except as otherwise specified. The pressure rating shall be indicated on the union.

1. Unions for Use in Brass Pipe or Copper Tubing Systems, 2" and under: Cast bronze, 150 lb Class, with bronze to bronze seats; with screw, brazing or solder ends, or with adapters as required.
2. Union shall be manufactured by:

NIBCO Inc.
SSmith-Cooper International
Weldbend Corporation.
Or approved equal.

D. Fittings for Type "L" copper tubing shall be wrought copper solder joint fittings suitable for brazing and shall be in accordance with ANSI B16.22. Type "L" fittings shall have a minimum working water pressure of 150 p.s.i. Alternately, hydronic fittings for hot water piping and chilled water piping may be press fittings by Viega ProPress (or approved equal) up to and including 4 inches in diameter.

- a. Flux for brazing shall be equal to "Handy Flux" and shall comply with Navy Dept. Spec. 51F 4a.
- b. The silver brazing alloy for brazed joints shall be similar to Handy & Harmon Sil-Fos brazing alloy having a silver content of not less than 15% and a flow point of 1300° Fahrenheit.

1. Alternately, fittings for Type "L" copper tubing may be cast bronze threaded fittings, Class 125 working steam pressure, conforming to ASTM B62 and ASME B16.24.
2. Type "L" fittings shall be manufactured by:

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Elkhart Products Corp.
Mueller Industries
NIBCO Inc.
Or approved equal.

- E. Mechanically formed tee-branch outlets (refer to MC 1203.3.8) may be used on aboveground copper tubing. The mechanically formed outlet shall be by T-Drill Industries, Inc. or approved equal. All joints formed in this manner shall be brazed in compliance with MC 1203.3.8.2 and manufacturer's recommendations. Soft soldered joints shall not be permitted.
- F. Couplings: Same material and pressure rating as adjoining pipe, conforming to standards for fittings in such pipe. Use taper tapped threaded type in screwed pipe systems operating in excess of 15 psig.
- G. Grooved Joints - for Steel Piping: Rolled or cut grooves, Pipe: Carbon Steel, ASTM A-53, or ASTM A-106, EPDM gaskets; Housing: Ductile Iron or Malleable Iron. System shall be designed for flexible or rigid installation. Welded flanges shall be used at equipment connections, and for maintenance removal sections. Manufacturers: Victaulic, Anvil International Inc/Gruvlok 7400 Rigidlite, or TYCO Grinnell Mechanical Products.
- H. Nipples: same material and strength as adjoining pipe, except nipples having a length of less than 1" between threads shall be extra heavy. Manufacturer: Allied Piping Products, Babcock & Wilcox, Crane Co., Tube Turns and Smith-Cooper International.

2.03 FLEXIBLE CONNECTIONS

- A. Corrugated inner tube and outer shield of wire braid: Stainless steel. Maximum working pressure at room temperature: 850° F and pressure safety factor of 4:1
- B. Corrugated inner tube and outer shield of wire braid: Bronze. Maximum working pressure at room temperature up to 150° F. Manufacturer: Metraflex Co. or Flex-Hose Co., Inc.
- C. Flexible Hose/Connections, stainless steel shall be manufactured by:

Allied Metal Hose Inc.
Mason Industries (Type BSS)
Metraflex Co.

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Or approved equal.

2.04 GALVANIZING

- A. Galvanizing Pipe and Fittings: hot dip process, inside and out in accordance with ASTM or other nationally recognized specifications to which pipe and fittings conform. Galvanize before threading.

2.05 JOINING AND SEALANT MATERIALS

- A. Solder: solid wire type conforming to type 2: 95-5
- B. Gasket Material
1. For Use with Cold Water: 1/16" thick rubber.
 2. For Use with Hot Water: Waterproofed non-asbestos mineral, or ceramic fiber, or spirally wound stainless steel V-shaped strip with non-asbestos filler and an outer steel compression ring, designed for the temperatures and pressures of the piping systems.
- C. Bolts and Nuts: heat treated carbon steel, ASTM A183 minimum tensile 110,000 psi.
- D. Thread sealant shall be a slow-drying formula that shall not harden or crack in the pipe joint. Sealant shall meet Fed. Spec. TT-S-1732. Sealant shall seal all types of pipe threads.
1. Thread sealant to be used on fuel oil and diesel piping shall be RectorSeal Corp No. 5, Oatey Great Blue pipe joint compound, or approved equal. Sealant shall be a non-toxic, soft setting, slow drying thread sealant made from inert fillers. The joint compound shall not contain any Teflon.
 - a. Teflon tapes shall not be used in fuel oil and diesel lines.

2.06 PIPING SPECIALTIES

- A. Provide factory-fabricated piping specialties recommended by manufacturer for use in service indicated.
- B. Pipe Escutcheons
1. Provide pipe escutcheons as specified herein with inside diameter closely fitting pipe outside diameter or outside of pipe insulation where pipe

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is insulated. Select outside diameter of escutcheon to completely cover pipe penetration hole in floors, walls, or ceilings; and pipe sleeve extension, if any. Provide pipe escutcheons with nickel or chrome finish for occupied areas, prime paint finish for unoccupied areas.

- a. Pipe Escutcheons for Moist Areas: For waterproof floors and areas, where water and condensation can be expected to accumulate, provide cast brass or sheet brass escutcheons, solid or split hinged.
- b. Pipe Escutcheons for Dry Areas: Provide sheet steel escutcheons, solid or split hinged.

2. Manufacturers:

Chicago Specialty Mfg. Co.
Producers Specialty & Mfg. Corp.
Sanitary-Dash Mfg. Co.
Or approved equal.

C. Strainers: Low Pressure Y-Type Pipeline Strainers:

1. Provide strainers full line size of connecting piping with ends matching piping system materials. Select strainers for 125 psi working pressure with perforated stainless-steel basket with 50 percent free area. Perforation or mesh size shall depend on strainer size and/or material being strained.
 - a. Threaded Ends, 2-1/2" and Smaller: Cast-iron body, screwed screen retainer with centered blow down fitted with pipe plug.
 - b. Flanged Ends, 3" and Larger: Cast-iron body, bolted screen retainer with off-center blow down fitted with pipe plug.
 - c. Butt Welded Ends, 3" and Larger: Schedule 40 cast carbon steel body, bolted screen retainer with off-center blow down fitted with pipe plug.
 - d. Grooved Ends, 2-1/2" and Larger: Tee or Wye Type, ductile-iron or malleable-iron body and access end cap, access coupling with EDPM gasket.

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2. Manufacturers:

Armstrong Machine Works.
Victaulic Co. of America
TYCO Grinnell Mechanical Products
Or approved equal.

D. Dielectric Unions:

1. Provide products which effectively isolate ferrous from non-ferrous piping (electrical conductance), prevent galvanic action, and stop corrosion. Per MC 1203.1.1 and 1303.1.1 joints between different metallic piping materials shall be made with approved dielectric fittings or brass converter fittings.

2. Manufacturers:

B&K Industries, Inc.
Capitol Mfg. Co.; Div. of Harsco Corp.
Eclipse, Inc.
Or approved equal.

E. Pipe Sleeves: Provide pipe sleeves of one of the following:

1. Sheet-Metal: Fabricate from galvanized sheet metal; round tube closed with snaplock joint, welded spiral seams, or welded longitudinal joint. Fabricate from the following gauges: 3" and smaller, 20 gage; 4" to 6", 16 gage; over 6", 14 gage.
2. Steel-Pipe: Fabricate from Schedule 40 galvanized steel pipe; remove burrs.
3. Iron-Pipe: Fabricate from cast-iron or ductile-iron pipe; remove burrs.
4. Plastic-Pipe: Fabricate from Schedule 80 PVC plastic pipe; remove burrs.

F. Mechanical Sleeve Seals

1. Modular mechanical type consisting of interlocking synthetic rubber links shaped to continuously fill annular space between pipe and sleeve, connected with bolts and pressure plates which cause rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation

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2. Provide mechanical sleeve seals for sleeves located in foundation walls below grade, or in exterior walls.
3. Manufacturers:

Thunderline Corp.;
Metraflex Co;
MetraSeal.
Or approved equal.

2.07 EXPANSION COMPENSATION

Not Used.

2.08 SLIP JOINTS

Not Used.

2.09 PIPE ALIGNMENT GUIDES

Not Used.

2.10 HANGERS AND SUPPORTS

A. General

1. Insulated Piping: Each pipe hanger supporting insulated piping shall be provided with a pipe covering protection shield.
2. Hangers for pipes smaller than 5" shall be forged or malleable iron ring type or steel clevis type supported by a solid steel rod.
3. Sockets used on upper ends of rods at beam clamps and on lower ends of rods for single hangers shall be malleable or forged steel with standard machine threads.
4. Supports for vertical piping shall be double bolt riser clamps, Grinnell MSS SP 69 Type 8 with each end having equal bearing on the building structure located as hereinafter specified. If piping is insulated, riser clamp shall be placed under insulation.
5. Trapeze type hangers shall be made of 2"x2"x1/4" carbon steel angle iron with drilled holes and 1/2" hanger rods. In lieu of an angle iron, a strut

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assembly may also be used for the trapeze style hanger supports.

- B. Pipe hangers shall be manufactured by:

Anvil International Inc. (Formerly Grinnell)
Cooper B-Line, Inc.
Grabler Mfg. Co.
Or approved equal.

2.11 INSERTS AND EXPANSION BOLTS

- A. Expansion bolts for use in new and existing reinforced concrete slabs: shall be wedge-type zinc-coated or stainless steel fastener with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used: Powers Fasteners, "Power Stud"; ITW Ramset/Red Head "Trubolt"; Hilti, Inc "Kwik Bolt" or approved equal.

2.12 SADDLES AND SHIELDS

- A. Except as otherwise indicated on the Drawings, provide saddles or shields under piping hangers and supports, factory-fabricated, for all insulated piping. Size saddles and shields for exact fit to mate with pipe insulation.

1. Protection Saddles: MSS Type 39; fill interior voids with segments of insulation matching adjoining insulation.
2. Protection Shields: MSS Type 40; of length recommended by the manufacturer to prevent crushing of insulation.
3. Thermal Hanger Shields: Constructed of 360° insert of high density, 100 psi, waterproofed calcium silicate, encased in 360° sheet metal shield. Provide assembly of same thickness as adjoining insulation.

- B. Manufacturers:

Elcen Metal Products Co.
Pipe Shields, Inc.
Value Engineered Products, Inc.
Or approved equal.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine areas and conditions under which all products are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to the City of New York.

3.02 PREPARATION

- A. Proceed with installation of hangers, supports and anchors only after required building structural work has been completed. Correct inadequacies including (but not limited to) proper placement of inserts, anchors and other building structural attachments.

3.03 PIPE INSTALLATION

- A. Install pipes in accordance with recognized industry practices, which will achieve permanently-leakproof piping systems, capable of performing each indicated service without piping failure. Align piping accurately at connections, within 1/16" misalignment tolerance. Comply with ANSI B31 Code for Pressure Piping.
- B. Locate piping runs, except as otherwise indicated, vertically and horizontally (pitched to drain) and avoid diagonal runs wherever possible. Orient horizontal runs parallel with walls and column lines. Locate runs as shown or described by diagrams, details and notations. Run piping in shortest route which does not obstruct usable space or block access for servicing building and its equipment. Hold piping close to walls, overhead construction, columns and other structural and permanent-enclosure elements of building; limit clearance to 1/2" where furring is shown for enclosure or concealment of piping, but allow for insulation thickness, if any. Where possible, locate insulated piping for 1" clearance outside insulation.
- C. Do not run piping through transformer vaults and other electrical or electronic equipment spaces and enclosures unless unavoidable. Install drip pan under piping that must be run through electrical spaces. Do not run piping in stairwells or elevator equipment rooms except for systems serving those spaces.
- D. In the outlet from each cooling coil condensate drain pan, provide a tee with a brass plug at one end to facilitate cleaning of drain.

3.04 INSTALLATION OF PIPE SYSTEM JOINTS

- A. Provide joint of type indicated in each piping system.
- B. Thread pipe in accordance with ASME B1.20.1; cut threads full and clean using sharp dies. Ream threaded ends to remove burrs and restore full inside diameter. Apply pipe joint compound, or pipe joint tape (Teflon[®]) where recommended by pipe/fitting manufacturer, on male threads at each joint and tighten joint to leave not more than three threads exposed.
- C. Weld pipe joints in accordance with recognized industry practice and as follows:
 - 1. Weld pipe joints only when ambient temperature is above 0° F where possible.
 - 2. Bevel pipe ends at a 37.5° angle where possible, smooth rough cuts, and clean to remove slag, metal particles and dirt.
 - 3. Use pipe clamps or tack-weld joints with 1" long welds, 4 welds for pipe sizes to 10", 8 welds for pipe sizes 12" to 20".
 - 4. Build up welds with stringer-bead pass, followed by hot pass, followed by cover or filler pass. Eliminate valleys at center and edges of each weld. Weld by procedures which will ensure elimination of unsound or unfused metal, cracks, oxidation, blow-holes and non-metallic inclusions.
 - 5. Do not weld-out piping system imperfections by tack-welding procedures; refabricate to comply with requirements.
- D. Brazed Joints: Joints in refrigerant piping shall be brazed. The outside of the copper tube and the inside of the fitting where solder will be applied, shall be cleaned and burnished with fine crocus cloth until all dirt and oxide is removed. A light coat of non-corrosive brazing flux shall be applied to both pipe and fittings (Acid flux shall not be used). Joint shall be uniformly heated to proper brazing temperature and the brazing material shall be fed to the joint until a uniform line of brazing material appears around the pipe at the end of the fitting. Brazing shall be done only by mechanics that are qualified for brazing refrigerant piping.
- E. Fittings for copper tubing for refrigerant use shall be wrought copper with solder type ends. Forged brass

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fittings are also acceptable for this purpose. Fittings shall be suitable for working water pressure up to 250 psi.

- F. Solder copper tube-and-fitting joints in accordance with recognized industry practice. Cut tube ends squarely, ream to full inside diameter, and clean outside of tube ends and inside of fittings. Apply solder flux to joint areas of both tubes and fittings. Insert tube full depth into fitting, and solder in manner that will draw solder full depth and circumference of joint. Wipe excess solder from joint before it hardens.
- G. The use of mechanical formed outlets on copper tubing instead of soldered joints is acceptable. The maximum diameter of branches shall be 2-1/8". Use appropriate tool designed for mechanical formed outlets on copper tubes. All mechanical formed tee fittings shall be brazed in accordance with the Copper Development Associations Copper Tube Handbook Using BCuP series filler metal. All mechanical formed branch collars shall be listed by UPC, and Underwriters Laboratory. They shall comply with ASME Code for pressure piping ANSI B31.5c.
- H. Offsets in piping shall be accomplished by means of standard fittings.
- I. Eccentric Fittings: reductions in sizes of hot water mains shall be made with eccentric fittings.
- J. Reducing Fittings: except for welded piping, no fittings shall be taped for drip except in boss provided for that purpose. Reducing fittings shall be used where drips are required.
- K. Unions shall be used in piping only adjacent to units of equipment such as pumps, compressors, heating coils, cooling coils and all other items and accessories, or in other locations where specified, where shown on the Drawings, or where written permission is granted prior to installation.
- L. Mechanical Couplings Type Fittings: The use of mechanical coupling type fittings on hot and cold water piping in lieu of threaded or flanged fittings is acceptable in sizes 2" to 8" inclusive. The mechanical couplings shall be self-centering and shall engage and lock the grooved pipe and/or fittings in a positive couple while allowing for some degree of angular pipe deflection, contraction and expansion. Entire coupling installation including pipe grooving shall be performed in accordance with the manufacturer's instructions. Victaulic couplings

together with their respective grooved end pipe fittings are acceptable.

3.05 INSTALLATION OF FLEXIBLE CONNECTIONS

- A. Install stainless steel type on the water line at the circulating pumps; and bronze type on the refrigerant line. Pipe system must be properly supported so as not to impose weight on the connectors which would compress the hose and relax the braid tension. Avoid torque. Do not twist the hose assembly during installation when aligning bolt holes in a flange or in mating-up the pipe threads.

3.06 PIPING TESTS

- A. For operational and hydrostatic tests, refer to Section 230593: Cleaning and Testing.
- B. Where piping installed under this project is connected to any existing system, such installed piping shall be isolated from the existing system during the performance of the required tests.

3.07 INSTALLATION OF PIPING SPECIALTIES

- A. Pipe Escutcheons: Install pipe escutcheons on each pipe penetration through floors, walls, partitions, and ceilings where penetration is exposed to view; and on exterior of building. Secure escutcheon to pipe or insulation so escutcheon covers penetration hole, and is flush with adjoining surface.
- B. Strainers
 1. Locate strainers in supply line ahead of the following equipment, and elsewhere as indicated, if integral strainer is not included in equipment:

Pumps
- C. Dielectric Unions: install at each piping joint between ferrous and non-ferrous piping. Comply with manufacturer's installation instructions.
- D. Pipe Sleeves
 1. Install pipe sleeves where piping passes through walls, floors, ceilings, and roofs. Do not install sleeves through structural members of work, except

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as detailed on the Drawings or as reviewed by the Commissioner. Install sleeves accurately centered on pipe runs. Size sleeves so that piping and insulation (if any) will have free movement in sleeve, including allowance for thermal expansion; but not less than 2 pipe sizes larger than piping run. Where insulation includes vapor-barrier jacket, provide sleeve with sufficient clearance for installation. Install length of sleeve equal to thickness of construction penetrated, and finish flush to surface; except floor sleeves. Extend floor sleeves 1/4" above level floor finish, and 3/4" above floor finish sloped to drain.

- a. Install sheet-metal sleeves at interior partitions and ceilings other than suspended ceilings.
 - b. Install iron-pipe sleeves at exterior penetrations, both above and below grade.
 - c. Install steel-pipe or plastic-pipe sleeves where indicated on the Drawings.
- E. Mechanical Sleeve Seals: Mechanical modular seals may be used in lieu of packing and sealant for sleeves and core drilled holes. Loosely assemble rubber links around pipe with bolts and pressure plates located under each bolt head and nut. Push into sleeve and center. Tighten bolts until links have expanded to form watertight seal. Use fire protective seals where required. Size annular space as required for seal installation.
- F. Fire Barrier Penetration Seals: refer to Section 078400: Firestopping.
- G. Drip Pans: locate drip pans under piping passing over or within 3 feet of electrical equipment, and elsewhere as indicated. Hang from structure with rods and building attachments, weld rods to side of drip pan. Brace to prevent sagging or swaying. Connect 1" drain line to drain connection, and run to nearest plumbing drain or elsewhere as indicated on Drawings.

3.08 INSTALLATION OF EXPANSION COMPENSATION

Not Used.

3.09 MISCELLANEOUS CONNECTIONS

Not Used

3.10 INSTALLATION OF SUPPORTS AND ANCHORS

- A. Provide all necessary pipe hanger material needed to safely and securely support or hang all piping. Pipe hanger loads shall be determined by accurate weight balance calculations to prevent transferring loads and forces to any equipment and terminal connections.
- B. Install building attachments at required locations within concrete or on structural steel for proper piping support. Space attachments within maximum piping span length indicated in MSS SP-69 and MSS SP-89.
- C. Install hangers, supports, clamps and attachments to support piping properly from building structure. Arrange for grouping of parallel runs of horizontal piping to be supported together on trapeze type hangers where possible. Install supports with maximum spacings complying with MSS SP-69 and MSS SP-89. Where piping of various sizes is to be supported together by trapeze hangers, space hangers for smallest pipe size or install intermediate supports for smaller diameter pipe. Do not use wire or perforated metal to support piping, and do not support piping from other piping.
- D. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers and all other items and accessories. Except as otherwise indicated for exposed continuous pipe runs, install hangers and supports of same type and style as installed for adjacent similar piping.
- E. Prevent electrolysis in support of copper tubing by use of hangers and supports which are copper plated or by other recognized industry methods.
- F. Provisions for Movement
 1. Install hangers and supports to allow controlled movement of piping systems.
 2. Load Distribution: Install hangers and supports so that piping live and dead loading and stresses from movement will not be transmitted to connected equipment.
 3. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and so that maximum pipe deflections allowed by ANSI B31 Pressure Piping Codes are not exceeded.

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- G. Insulated Piping: Comply with the following installation requirements.
1. Clamps: Attach clamps, including spacers (if any), to piping with clamps projecting through insulation; do not exceed pipe stresses allowed by ANSI B31.
 2. Shields: Where low-compressive-strength insulation or vapor barriers are indicated on chilled water piping, install coated protective shields.
 3. Saddles: Where insulation without vapor barrier is indicated, install protection saddles.
- H. Install anchors at proper locations to prevent stresses from exceeding those permitted by ANSI B31 and to prevent transfer of loading and stresses to connected equipment.
- I. Fabricate and install anchor by welding steel shapes plates and bars to piping and to structure. Comply with AWS standards.
- J. The refrigerant piping above the roof slab shall be supported in a galvanized sheet steel enclosure. The cover of the enclosure shall be held in place with stainless steel sheet metal screws on 18" centers. The base of the enclosure shall be secured to the angle uprights with 1/4" bolts, washers and nuts.
- K. Hangers and supports for refrigerant piping shall be copper plated, malleable iron or carbon steel.

3.11 CLEANING, FLUSHING, INSPECTING

- A. Clean exterior surfaces of superfluous materials, and prepare for application of specified coatings (if any). Flush out piping systems with clean water before proceeding with required tests. Inspect each run of each system for completion of joints, supports and accessory items. Inspect pressure piping in accordance with procedures of ASME B31.
- B. Hanger Adjustments: adjust hangers so as to distribute loads equally on attachments.
- C. Support Adjustment: provide grout under supports so as to bring piping and equipment to proper level and elevations.

3.12 PIPE AND FITTING SCHEDULE

- A. Cold Water Above Ground (CW) 125 psig and Less:
 - 1. Type "L" Copper tubing with soldered fittings.
- B. Hot Water Supply and Return (HWS and HWR) 125 psig and less:
 - 1. 2" and Less: Type L hard temper copper tubing with bronze or copper solder fittings. Mechanically formed tee fittings may be used in lieu of solder-joint tee fittings.
 - 2. 2-1/2" and 3": Standard Weight Black Steel pipe with Screwed End Standard Weight Cast-Iron fittings 3" and Up: Standard Weight Black Steel pipe, with Weld End Standard Weight Steel fittings or Grooved End with Grooved End fittings.
- C. Refrigerants (RS, RL, RG and RD) 350 psig and Less: Type L hard temper copper tubing with brazed fittings.
- D. Condensate Drain Piping: all drip piping from air handling units; all drains and overflow lines from heating and air conditioning systems, and all condensate piping systems connected to drain pans - All Sizes: Standard weight (Schedule 40) galvanized steel pipe; minimum size 1" or Type L hard temper copper tubing and fittings.

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SECTION 230523
VALVES (HVAC)

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide labor, materials, equipment, accessories, services and test necessary to complete and make ready for operation, all valves shown on the Drawings and hereinafter specified in other Division-23 Sections (HVAC).

1.02 RELATED SECTIONS

A. Division 23 Sections

1.03 SUPPLEMENTAL SUBMITTALS

A. Product Data: Submit manufacturer's product data including valve design, pressure and temperature classification, end connection details, seating materials, trim material and arrangement, required clearances and installation instructions.

B. Shop Drawings: Submit valve schedule showing manufacturer's figure number, location, and valve features for each required valve. Include list indicating valve and its application in the schedule.

C. Maintenance data.

D. Maintenance Material:

1. Deliver extra wrenches to the Commissioner and attach receipt to final payment.
2. Padlock and two (2) keys for each lock.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

A. Codes and Standards

1. MSS Compliance: Mark valves in accordance with MSS-25: Standard Marking System for valves, fittings, flanges and unions and all other applicable MSS Standards.
2. ANSI Compliance: For face-to-face and end-to-end dimensions.
3. UL and FM Compliance: Provide valves used in fire protection piping which are UL-listed and FM approved.
4. ASME Compliance: Comply with ASME B31.9 for building services piping and ASME B31.1 for power piping.

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5. Testing of material and equipment shall be in accordance with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department (MEA) before the effective date of the NYC Construction Codes may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.

B. Valves of one type throughout the Project shall be of the same manufacturer. Valve parts of same manufacturer, size and type shall be interchangeable.

PART 2 - PRODUCTS

2.01 GENERAL

A. Provide all the valves shown on the Drawings (HVAC Work) and necessary for the control and easy maintenance of all piping and equipment. Valves shall be first quality, have proper clearance, followers in the packing glands, and shall seal tight at the specified test pressure. Each valve shall have the maker's name or brand, the figure or list number and the guaranteed working pressure cast on the body and cast or stamped on the bonnet.

1. Working Pressure: Valves shall be designed for steam working pressure of not less than 125 psi, for water of not less than 200 psi and 350 psig hydrostatic tests.

2. Wheels: Shut-off valves shall have self-cooling type metal hand wheels except where specified otherwise. For valves other than outside screw and yoke type gate valves, the valve stem shall be extended through the wheel and be provided with hexagon nuts to secure the wheel in place.

B. All valves shall be designed for packing under pressure with valve open or closed.

C. Valves 2" and under shall be all bronze, unless otherwise specified or shown on the Drawings. Valves

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2 1/2" and larger shall be iron body bronze mounted (IBBM), iron body brass mounted, or iron body with outside screw and yoke (OS&Y) unless space conditions prevent the use of OS&Y valves, in which case non-rising stem valves may be used.

- D. Solder end valves shall be suitable for brazing.
- E. All valves up to 2" in diameter shall have threaded or solder ends, 2 1/2" in diameter and over shall have flanged, or butt-welded unless otherwise specified or shown on the Drawings.

2.02 MATERIALS

A. Body

- 1. Cast Iron: ASTM A126, Class B, higher strength cast iron.
- 2. Bronze: For use up to 150 psig WSP, ASTM B62 and over 150 psig to 300 psig WSP, ASTM B61.
- 3. Cast Steel: ASTM A216 Grade WCB.
- 4. Forged Steel: ASTM A105.

B. Stem

- 1. Cast Manganese Bronze: ASTM B584.
- 2. Cast Silicon Brass: ASTM B584.
- 3. Rolled Silicon Brass: ASTM B98 Alloy D.
- 4. Rolled Aluminum Bronze: ASTM B150 Alloy 1.
- 5. Rolled Manganese Bronze: ASTM B138 Alloy A (half hard).
- 6. Naval Brass: ASTM B21 Alloy A or Alloy C (hard).
- 7. Carbon Steel: As specified for particular type of valve.
- 8. Stainless Steel: As specified for particular type of valve.

C. Trim: As specified for particular type of valve.

2.03 GATE VALVES

- A. All gate valves shall be of the solid wedge disk type.
- B. Gauge Valves: Use gate valves, cocks are not acceptable.
- C. Hose gate valves shall be 125 psi, 3/4", standard weight bronze with cap.

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D. Manufacturers

Crane Co.
Hammond Valve Corp.
NIBCO, Inc.
Or approved equal.

2.04 GLOBE VALVES

- A. Except valves in pneumatic and automatic temperature control piping and pneumatic and automatic valves, no globe valve of size larger than 1/2" shall be used, unless otherwise specified or shown on the Drawings. Where globe valves are approved, they shall be of the same grade called for other valves.

2.05 CHECK VALVES

- A. Check valves shall be of heavy pattern, straightway, re-grinding type with renewable seat, ground seat and approved type renewable discs. The discs for check valves, of size larger than 2" may be bronze faced.
- B. Swing Check Valves: horizontal swing, Y-pattern, cast-bronze body and cap, bronze disc with rubber seat or composition seat, threaded or soldered end connections or cast-iron body and bolted cap, horizontal-swing bronze disc, flanged or grooved end connections. Face discs for cold water service can be Buna-N or Teflon.
- C. Silent Check Valves: cast-iron body, bronze trim, stainless steel spring and flanged end connections.
- D. Lift check valves shall be globe style, streamline, spring loaded.
- E. Manufacturers
- Crane Co.
Hammond Valve Corp.
NIBCO, Inc.
Or approved equal.

2.06 COCKS

- A. Cocks, where specified or shown on the Drawings shall be for not less than 150 psi working pressure. Asbestos packed cocks will not be approved.

2.07 PLUG VALVES

- A. Lubricated Plug Valves shall be of the lubricated tapered plug type, with cast iron body. Plugs shall be Teflon coated and fitted with an "O" ring packing.

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- B. Tapered plugs shall be faced with a thermally bonded anti-friction material. Valves shall have "Sealed Port" lubrication system allowing complete lubrication of valve while in service, under line pressure, installed in any position.

2.08 BALL VALVES

- A. Ball valves shall be two-piece full ported 600 W.O.G. bronze body, solid blow-out proof stem, teflon seats, chrome plated bronze or brass ball and Teflon seats, corrosion resistant steel lever handles with vinyl grips, balancing stop with screw or solder ends. Screw end ball valve shall be Apollo 70-100, Inc., Milwaukee BA-100, NIBCO T-585-70, or approved equal, and solder end ball valve shall be Apollo 70-200, Milwaukee BA-150, NIBCO T-585-70, or approved equal. Ball valves should be used for up to 2" sizes only.

2.09 VALVES FOR REFRIGERANTS SERVICE

- A. Valves shall have forged brass or bronze bodies conforming to ASME B31.5 Code for Refrigerant Piping.
1. Valves with sweat or flare connections, in sizes up to and including 5/8" OD shall be of packless metal diaphragm type and 3/4" OD larger, for use in hard temper tubing with sweat connections shall be of packed type with wing cap. Packed valves shall be backseating to permit repacking under pressure and the wing cap shall have a socket formed in top, so that it may be inverted and used to turn stem.
 2. Check valves: Spring loaded type with bronze body, bronze disc, neoprene or Teflon seat, bronze bonnet with stainless steel spring.

B. Manufacturers

Alco Control Division
Henry Valve Co.
Sporlan Valve Co.
Or approved equal.

2.10 FORGED OR CAST STEEL VALVES

A. Gate Valves:

1. Class 800, forged steel body and bonnet, wedge, stem and seat ring: stainless steel; bonnet gasket: spiral wound stainless steel with 316

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spiral wound graphite packing ring; hand wheel:
malleable iron or steel, bolted bonnet, OS&Y,
solid wedge, threaded or socket welded ends.

2. Class 300, cast steel body, bolted bonnet, OS&Y,
solid wedge; seat rings: copper nickel alloy or
monel; wedge: steel with stainless steel face
hardened; handwheel: steel or malleable iron,
flanged or welding ends.

B. Check Valves.

1. Horizontal swing check, cast steel body and bolted
cap, Class 300. Disc shall be heavy one piece
construction, suspended on a detachable hinge with
detachable hinge pin. Body and cap: cast steel;
seat ring: Stainless steel; disc: stainless steel
and renewable; hinge pin: stainless steel and
renewable, gasket: soft corrugated iron.
2. Lift check, forged steel body and bolted or union
type cap, Class 600. Body and cap: forged steel;
seat ring: stainless steel; disc: stainless and
renewable, gasket: spiral wound stainless steel
with 316 spiral wound graphite.
3. Silent check, cast steel body, stainless steel
trim and spring, Class 300, flanged ends.
4. Piston Check: Class 800 forged steel body,
stainless steel piston disc and trim, bolted cap,
non-asbestos gasket, threaded or socket welded
ends.

C. Manufacturers

R-P&C Valve/Bonney Forge Corporation
Newco Valves
Vogt Valves
Or approved equal

2.11 VALVE OPERATORS

- A. Provide suitable handwheel for gates, globes or angles,
and drain valves.
- B. Provide one plug valve wrench for every ten plug valves
sized 2" and smaller, minimum of one. Provide each
plug valve sized 2-1/2" and larger with a wrench, with
set screw.
- C. Provide valves located more than 7' from floor in
equipment room areas with chain operated sheaves.
Extend chains to about 5' above floor and hook to
clips arranged to clear walking aisles. Provide
extended valve shafts, 4" min to keep chain away from
pipe insulation.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Except as otherwise indicated, comply with the following requirements:
1. Install valves where required for proper operation of piping and equipment including valves in branch lines where necessary to isolate sections of piping. Locate valves so as to be accessible and so that separate support can be provided when necessary.
 2. Install valves with stems pointed up, in vertical position where possible, but in no case with stems pointed downward from horizontal plane unless unavoidable. Nonrising stem valves shall be used only where headroom prevents full extension of rising stems. Install valve drains with hose-end adapter for each valve that must be installed with stem below horizontal plane.
 3. Install gate valves for shut-off; to isolate equipment, parts of systems, and vertical risers and any banked system of coils and to separate each coil.
 4. Hose gate valves: Provide hose gate valves to drain the pipe at the low points of the system.
 5. Install globe for throttling service and control device.
 6. Use tapered lubricated plug valves in water systems for throttling service and at the discharge of all pumps. Use nonlubricated plug valves only when shut-off or isolating valves are also provided.
 7. Provide tapered lubricated 1" drain gate valves at main shut-off valves, and at all low points of piping and apparatus.
 8. Provide 1" gate vent valves at all high points in the piping system.
- B. Insulation: Where insulation is indicated, install extended-stem valves, arranged in proper manner to receive insulation.
- C. Mechanical Actuators: Install mechanical actuators with chain operators where indicated on the Drawings. Extend chains to about 5'6" on the floor and hook to clips to clear aisle passage.

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3.02 ADJUSTING AND CLEANING

- A. Valve Adjustment: After piping systems have been tested and put into service, but before final testing, adjusting, and balancing, inspects each valve for possible leaks. Adjust or replace packing to stop leaks, replace valve if leak persists.
- B. Cleaning: Clean factory-finished surfaces. Repair any marred or scratched surfaces with manufacturer's touch-up paint.

3.03 MINIMUM VALVE REQUIREMENTS (MC 1205)

- A. Shutoff valves shall be installed on the supply and return side of all heat exchangers.
- B. Shutoff valves shall be installed on the building supply and return of central utility systems and district heating and cooling systems.
- C. Shutoff valves shall be installed on the connection to any pressure vessel.
- D. Shutoff valves shall be installed on both sides of a pressure-reducing valve.
- E. Shutoff valves shall be installed on connections to mechanical equipment and appliances. This requirement does not apply to components of a hydronic system such as pumps, air separators, metering devices and similar equipment.

3.03 VALVES SCHEDULES APPLICATION

- A. Cold Water in Buildings
 - 1. 2-1/2" and Less: Solder end; Class 125, bronze body gates; and swing checks.
- B. Hot and Dual Water Temperature
 - 1. 4" and Less: solder ends; Class 125, bronze body gates, swing checks. Grooved copper ends 2" and up.
 - 2. 5" and Up: Flanged ends; Class 125, OS&Y iron body gates; and bolted cover, renewable disc checks.

3.04 VALVE SCHEDULES

- A. Gate valves - 2-1/2 inch and Less:

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Class 125:

<u>Manufacturer</u>	Threaded	Threaded	Solder	Solder
	NRS	RS	NRS	RS
Crane	438	428	1701S	1700S
Hammond	IB645	IB640	IB647	IB635
Nibco	T113	T111	S113	S111
Approved equal				

B. Gate valves - 3 inch and Up

Class 125:

<u>Manufacturer</u>	OS&Y RS	NRS
Crane	465-172	461
Hammond	IR1140	IR1138
Nibco	F-617-0	F-619
Approved equal		

C. Swing Check valves - 2-1/2 inch and Less:

<u>Manufacturer</u>	Class 125 Threaded Ends	Class 125 Solder Ends	Class 150 Threaded Ends
Crane	37	1340	141TF
Hammond	IB904	IB912	IB946
Nibco	T-413B	S-413B	T-433Y
Approved equal			

Class 300:

<u>Manufacturer</u>	Threaded
Crane	76E
Hammond	IB949
Nibco	T-473-B
Approved equal	

D. Swing Check valves - 3 inch and Up

<u>Manufacturer</u>	Class 125
Crane	373
Hammond	IR1124
Nibco	F-918
Approved equal	

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SECTION 230549
VIBRATION ISOLATION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide a complete system of vibration isolation for each item of HVAC and Electrical equipment and apparatus as specified herein, as shown on the Drawings and as needed for a complete and proper installation.

1.02 RELATED SECTIONS

- A. Division 23 Sections
- B. Division 26 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Product Data: Submit Manufacturer's Product Data for the vibration isolating supports required for each item of HVAC and Electrical equipment.
 - 1. Submit schedule showing manufacturers' mounting sizes and guarantee deflections.
- B. Shop Drawings: Submit Shop Drawings for the vibration isolating supports required for each item of HVAC and Electrical equipment, showing details of intermediate structural steel members and method of attachment required for installation of vibration isolating devices.
- C. Manufacturer's certification as specified in the Field Quality Control Article.
- D. Maintenance data.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

- A. Manufacturer's Regulating Requirements: Contractors shall determine vibration isolation sizes and locations per the criteria defined in Article 3.02.C.
- B. Per MC 301.10: Where vibration isolation of equipment and appliances is employed, supplemental restraint shall be used to accomplish the support and restraint.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Approved manufacturers:

Mason Industries, Inc.
Vibration Eliminator Co.
Vibration Mountings & Controls Inc.
Or approved equal.

2.02 MATERIALS

A. Spring Mounts

1. Housed Spring Mounts: Spring type mounts shall consist of cast telescoping housings containing one or more steel springs. The mount shall be provided with built-in leveling bolt(s), resilient inserts of neoprene to act as guides for upper and lower housings and with ribbed neoprene acoustical pads bonded to the bottom of the lower housing. The lower housing shall have slotted holes in the base, to permit fastening of the mount to the floor.

2. Free standing spring mounts shall be laterally stable without housing. Each mount shall be provided with a leveling bolt, a ribbed neoprene pad on the underside of the base, and means of securing the spring base to the floor when specified. Free standing spring mounts shall be used where a floating pad system or an inertia block is specified.

B. Neoprene-in-Shear Mounts: Each neoprene-in-shear type mount shall consist of a steel top plate and steel base plate completely enclosed in oil resistant neoprene. Top plate shall have a threaded bolt hole for attachment of equipment to mount. Base plate shall have bolt holes, to permit fastening of the mount to the floor when specified. Underside of base plate shall have ribbed, neoprene construction. Single neoprene-in-shear mounts shall have a maximum deflection of 0.25". Double neoprene-in-shear mounts shall have a maximum deflection of 0.50".

B. Hanger Type Isolators: Hanger type isolators shall consist of a steel housing incorporating a single or double neoprene-in-shear element or a steel spring, or a combination of these two isolators, as needed to achieve the required static deflection. Provide threaded rods for attachment of hanger to overhead structure and to equipment.

PART 3 - EXECUTION

3.01 PREPARATION

- A. For vibration isolation equipment installed indoors, all metal parts, including rails and bases, shall be painted at the factory with one coat of primer paint and one coat of aluminum paint. Other means or rust resisting painting may be accepted, subject to prior approval.
- B. Vibration isolation equipment installed outdoors shall have all steel parts hot dipped galvanized, all bolts cadmium plated, and all springs cadmium plated and neoprene coated.
- C. Vibration isolation equipment installed outdoors shall be designed and installed to resist wind loads in accordance with the NYC Building Code.

3.02 SUPPLEMENTAL INSTALLATION

- A. At each equipment location, provide the required deflection under the imposed load to produce uniform loading and deflection even when equipment weight is not evenly distributed. Isolators shall be suitable for the lowest operating speed of the equipment.
- B. Where the floor is waterproofed or finished with waterproof cement, install vibration isolation in such manner that the waterproofing is not damaged.
- C. Isolation equipment shall be in accordance with the following table:

<u>Lowest RPM</u>	<u>Inches Deflection</u> (Min.)	<u>% Efficiency</u>	<u>Type</u>
1750 & over	.25	95	Single neoprene- in-shear
1200-1749	.50	95	Double neoprene- in-shear
1000-1199	.75	95	Spring
570-999	1.25	90-95	Spring
520-569	1.5	90	Spring
330-519	2.0	80-90	Spring

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Up to 329

3.5

80

Spring

- D. Install combination spring and double deflection neoprene position hangers on the suction and discharge piping at each circulating pump. Each hanger shall be located on the pump side of the flexible hose connection.
- E. Cooling towers, evaporative condensers, fluid coolers and air cooled condensers located on a roof or floor above grade shall be installed on vibration isolators providing a minimum isolation efficiency of 85 percent at fan motor RPM with a maximum static deflection of 4 inches and shall incorporate a leveling device and resilient pad having a minimum thickness of $\frac{1}{4}$ inch. Refer to MC 908.4.
- F. Per MC 926.2.3: Equipment piping shall be installed as follows:
1. Metal piping connected to power driven equipment shall be resiliently supported from or on the building structure for a distance of 50 pipe diameters from the power driven equipment. The resilient isolators shall have a minimum static deflection of 1 inch for all piping with a 4 inch or larger in actual outside diameter and $\frac{1}{2}$ inch for piping with less than 4 inches in actual outside diameter.
Piping connected to fluid pressure-reducing valves shall be resiliently isolated for a distance of 50 pipe diameters from pressure reducing valves and isolators shall provide a minimum static deflection of $\frac{1}{2}$ inch.
 2. Equipment such as heat exchangers, absorption refrigeration machines, or similar equipment, that are located on any floor or roof other than a floor on grade, and that are not power driven but are connected by metal piping to power driven equipment, shall be resiliently supported from or on the building structure, for a distance of 50 pipe diameters from the power driven equipment. The resilient supports shall be vibration isolators having a minimum static deflection of 1 inch and shall incorporate approved resilient pads having a minimum thickness of $\frac{1}{4}$ inch.
- H. Per MC 926.2.4: All fan equipment located on any roof or floor other than a floor on grade shall be mounted on or from vibration isolators. Fan equipment with motor drives separated from the fan equipment shall be supported on an isolated integral rigid structural base supporting both the fan and motor. Fan equipment with

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motor drives supported from the fan equipment shall be mounted directly on vibration isolators. Each isolator shall have provision for leveling. Isolators shall incorporate resilient pads having a minimum thickness of 1/4 inch. The vibration isolators shall provide a minimum isolation efficiency of 90 percent at fan rotor rpm with a maximum deflection of 2 inches. Fans and compressors of 3 horsepower (2.25 kW) or less assembled in unitary containers may meet this requirement with isolators internal to the container providing the isolators meet the above minimum isolator efficiencies.

- I. Per MC 926.2.5: All pumps of 3 horsepower (2.25 kW) or more located on any floor other than a floor on grade shall be supported on vibration isolators having a minimum isolation efficiency of 85 percent at the lowest disturbing frequency. Each isolator shall incorporate a leveling device and a resilient pad having a minimum thickness of 1/4 inch.
- J. Per MC 926.2.6: Compressors and drives located on a floor other than a floor on grade shall be mounted on vibration isolators having a minimum isolation efficiency of 85 percent at the lowest disturbing frequency. Each isolator shall incorporate a leveling device and a resilient pad having a minimum thickness of 1/4 inch.
- K. Per MC 926.2.9: Duct Connections to Fan Equipment: Flexible connections shall be installed between the fan equipment and connecting ductwork.

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SECTION 230553
HVAC IDENTIFICATION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide all the mechanical (HVAC) identification work shown in the Drawing Schedules, specified in other Division-23 Sections and needed for a complete and proper installation. The types of identification devices specified in this Section include the following:

Painted Identification Materials
Plastic Pipe Markers
Valve Tags
Valve Schedule Frames
Plastic Equipment Markers
Plasticized Tags

1.02 RELATED SECTIONS

- A. Division 23 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Shop Drawings: Provide list of identification wording, symbols, letter size, and color coding.
- B. Schedules: Submit valve schedule for each piping system, typewritten and reproduced on 8-1/2" x 11" bond paper. Include valve number, piping system, system abbreviation (as shown on tag), location of valve (room or space), and variations for identification (if any). Mark valves that are intended for emergency shut-off and similar special uses by special "flags" in margin of schedule.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

- A. Codes and Standards

1. ANSI Standards: Comply with ANSI A13.1 for lettering size, length of color field, colors, and viewing angles.

PART 2 - PRODUCTS

2.01 MATERIALS AND MANUFACTURERS

- A. Provide manufacturer's standard products of categories and types required for each application as referenced in other Division-23 Sections (HVAC), shown on the Drawings and/or Schedules. Where more than single type is specified for

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application, selection is the Commissioner option, but provide single selection for each product category.

B. Painted Identification Materials:

1. Stencils: fiberboard stencils, prepared for required applications with letter sizes generally complying with recommendations of ANSI A13.1.
 - a. Stencil Paint: exterior type stenciling enamel except as otherwise indicated on the Drawings; either brushing grade or pressurized spray-can form and grade.
 - b. Identification Paint: enamel of colors indicated or, if not otherwise indicated for piping systems, comply with ANSI A13.1 for colors or as selected by the Commissioner.

C. Plastic Pipe Markers:

1. Snap-On Type: Pre-printed, semi-rigid snap-on, color-coded pipe markers, complying with ANSI A13.1 or as selected by the Commissioner.
2. Provide 1" thick molded fiberglass insulation with jacket for the plastic pipe marker to be installed on uninsulated pipes subjected to fluid temperatures of 125° F or greater. Cut length to extend 2" beyond each end of plastic pipe marker.
3. Small Pipes: For external diameters less than 6" (including insulation if any), provide full-band pipe markers, extending 360° around pipe, fastened by snap-on application of pre-tensioned semi-rigid plastic pipe marker.
4. Large Pipes: For external diameters of 6" and larger (including insulation if any), provide either full-band or strip-type pipe markers, but not narrower than 3 times letter height, fastened by strapped-to-pipe (or insulation) application of semi-rigid type, with stainless steel bands.
5. Lettering: Pre-printed nomenclature which best describes piping system in each instance, as shown on the Drawings or as selected by the Commissioner in cases of variance with name shown or specified.
 - a. Arrows: Print each pipe marker with arrows indicating direction of flow, either integrally with piping system service lettering (to

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accommodate both directions), or as separate unit of plastic.

D. Valve Tags

1. Brass Valve Tags: 19-gage polished brass valve tags with stamp-engraved piping system abbreviation in 1/4" high letters and sequenced valve numbers 1/2" high, and with 5/32" hole for fastener.
 - a. Provide 2" sq tags
 - b. Numbers and letters shall be block type, indented and filled with durable black compound.
2. Valve Tag Fasteners: solid brass chain (wire link or beaded type), or solid brass S-hooks of the size required for proper attachment of tags to valves, and manufactured specifically for that purpose.

E. Valve Schedule Frames: For each page of valve schedule, provide safety glass in wood or aluminum self-closing frame, with screws for mounting on masonry walls.

H. Plastic Equipment Markers:

1. Laminated plastic, color coded equipment markers. Conform to the following color code if not specified otherwise:

Green: Cooling equipment and components.

Yellow: Heating equipment and components.

Yellow/Green: Combination cooling and heating equipment and components.

Brown: Energy reclamation equipment and components.

Blue: Equipment and components that do not meet any of the above criteria.

For hazardous equipment, use colors and designs recommended by ANSI A13.1.

2. Nomenclature: Include the following matching terminology on schedules and Drawings as closely as possible:

Name and plan number

Equipment service

Design capacity

Other design parameters such as pressure drop, entering and leaving conditions, rpm, and all other items and accessories

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3. Size: approximate 2-1/2" x 4" markers for control devices, dampers and valves; and 4-1/2" x 6" for equipment.
- J. Plasticized Tags: Pre-printed or partially pre-printed accident-prevention tags, of plasticized card stock with matt finish suitable for writing, approximately 3-1/4" x 5-5/8", with brass grommets and wire fasteners, and with appropriate pre-printed wording including large-size primary wording (as examples: DANGER, CAUTION, DO NOT OPERATE).
- K. Lettering and Graphics:
1. Coordinate names, abbreviations and other designations used in the identification work with corresponding designations shown on the Drawings or Schedules, or specified. Provide numbers, lettering and wording as indicated or, if not otherwise indicated, as recommended by manufacturers or as required for proper identification and operation/maintenance of systems and equipment.
- L. Approved Manufacturers
- Allen Systems, Inc.
Brady (W.H.) Co.; Signmark Div.
Industrial Safety Supply Co., Inc.
Or approved equal.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Coordination: Where identification is to be applied to surfaces that require insulation, painting or other covering or finish, including valve tags in finished mechanical spaces, install identification after completion of covering and painting. Install identification prior to installation of acoustical ceilings and similar removable concealment.
- B. Piping System Identification: Install pipe markers and color bands and include arrows to show direction wherever piping is exposed to view in occupied spaces, machine rooms, accessible maintenance spaces (shafts, tunnels, plenums) and exterior non-concealed locations.
1. Near each valve and control device
 2. Near each branch, excluding short take-offs for terminal units; mark each pipe at branch, where there could be question of flow pattern.

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3. Near locations where pipes pass through walls or floors/ceilings, or enter non-accessible enclosures.
4. Near major equipment items and other points of origination and termination.
5. Spaced intermediately at maximum spacing of 50' along each piping run, except reduce spacing to 25' in congested areas of piping and equipment.
6. On piping above removable acoustical ceilings except omit intermediately spaced markers.

C. Valve Identification:

1. Provide valve tag on every valve, cock and control device in each piping system; exclude check valves, valves within factory-fabricated equipment units, and shut-off valves at HVAC terminal devices and similar rough-in connections of units. List each tagged valve in valve schedule for each piping system.
 - a. Tagging Schedule: Comply with requirements of "Valve Tagging Schedule" at end of the Section.
2. Mount valve schedule on frames located in machine rooms where indicated or, if not otherwise indicated, where directed by the Commissioner.

D. A permanent factory-applied name-plate(s) shall be affixed to appliances (reference MC 301.6) on which shall appear in legible lettering, the manufacturer's name or trademark, the model number, serial number and the seal or mark of the approved agency. A label shall also include the following:

1. Electrical equipment and appliances: Electrical rating in volts, amperes and motor phase; identification of individual electrical components in volts, amperes or watts, motor phase; Btu/h output; and required clearances.
2. Fuel-burning units: Hourly rating in Btu/h; type of fuel approved for use with the appliances; and required clearances.

E. Mechanical Equipment Identification:

- 1a. Install plastic equipment marker near each major item of mechanical equipment and each operational device, as specified herein if not otherwise specified for each item or device in their respective sections. Provide

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signs for the following general categories of equipment and operational devices:

- a. Main control and operating valves, including safety devices
 - b. Meters, gauges, thermometers and similar units
 - c. Strainers, filters, humidifiers, water treatment systems, thermostatic traps and similar equipment
 - d. Primary balancing dampers, mixing boxes
- 1b. Provide permanent factory-applied name-plate(s) for all appliances as defined in Article 3.01.D including but not limited to the following:
- a. Fuel-burning units including boilers, furnaces and heaters units
 - b. Pumps, compressors, chillers, condenser and similar motor-driven units
 - c. Converters, heat exchangers, coils, evaporators, heat recovery units and similar equipment
 - d. Fans, blowers and VAV terminals
 - e. Packaged HVAC central-station, zone-type units, heat pumps, air handling units, heating and ventilating units
 - f. Tanks and pressure vessels
2. Plastic equipment marker lettering Size: Minimum 1/4" high lettering for name of unit where viewing distance is less than 2', 1/2" high for distances up to 6', and proportionally larger lettering for greater distances. Provide secondary lettering 2/3 to 3/4 of size of principal lettering.
3. Text of Signs: In addition to name of identified unit, provide lettering to distinguish between multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations.
4. Optional Use of Plasticized Tags: At the Commissioner's option, where equipment to be identified is concealed above acoustical ceiling or similar concealment, plasticized tags shall be installed within concealed

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space to reduce amount of text in exposed sign (outside concealment).

- a. Operational valves, dampers and similar minor items located in non-occupied spaces (including machine rooms) shall be identified by plasticized tags.

3.02 VALVE TAGGING SCHEDULES

- A. Numbers: Arrange the numbering of valves in the following manner:
 1. In First Story - No. 1000 to No. 1999.
 2. On Roof or in Roof Penthouse or Bulkhead-No. R1 to No. R999.
- B. In no case shall a number applying to one story, be assigned to a valve located in another story.
- C. For other information, refer to the Drawings.

END OF SECTION

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SECTION 230593
CLEANING AND TESTING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide Cleaning and Pressure/Operational Testing for the HVAC Work done on this Project.

1.02 RELATED SECTIONS

- A. Division 23 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Product Data: List of instruments to be used for each test. Include instrument calibration requirements as specified.
- B. Quality Control Submittals
1. Submit Field Cleaning/Test Results For The Following:
 - a. Piping Pressure Tests
 - b. Low Pressure Hot Water Heating Boiler and Pressure Vessels: Hydrostatic Test and Relief Valve Test
 - c. Hot Water System: Cleaning and Operational Tests
 - d. Refrigeration Systems: Pressurization Tests, Dehydration Tests, and Operational Tests
 - e. Chimney and Breeching Pressure Smoke Test
 - f. Post Cleaning Report
- B. Refrigerant: Submit the record of the weight in pounds of refrigerant charged into each system to the City of New York.
- C. Test Schedule and Procedures Plan: Submit time schedule and copy of the step-by-step testing procedures for each system. Isolating valves and flanges, vent fittings and pressure gauges utilized during the testing shall be indicated on the submitted appropriate shop drawings.

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1.04 SUPPLEMENTAL QUALITY ASSURANCE

A. Regulatory Requirements

1. Perform testing of factory fabricated equipment in accordance with all the City agencies having jurisdiction.
2. Perform field-testing of piping systems in accordance with all the City agencies having jurisdiction and as specified.

1.05 PROJECT CONDITIONS

- A. Protection: During Test Work, protect controls, gauges and accessories that are not designed to withstand test pressures. Do not utilize permanently installed gauges for field-testing of systems.

1.06 SEQUENCING AND SCHEDULING

- A. Transmit written notification of proposed date and time of all tests to the Commissioner at least 5 days in advance of such tests.
- B. Perform Cleaning and Testing Work in the presence of the Commissioner. An independent Licensed in New York State Professional Engineer retained by the Commissioner shall additionally witness the 120-hour Operational Tests (for systems other than Building Management Systems and Direct Digital Control Systems which need not be witnessed since monitored parameters will be trended).
- C. Pressure test piping systems inside buildings, at the roughing-in stage of installation, before piping is enclosed by construction work and at other times as directed. Perform test operations in sections as required and directed, to progress the Work in a satisfactory manner and not delay the general construction of the building. Valve or cap-off sections of piping to be tested. Contractor can utilize valves required to be installed in the permanent piping systems, or temporary valves or caps as required to perform the Work. The contractor is responsible to provide all isolation valves/flanges required in order to perform the pressure testing. Testing valves/flanges shall be indicated on the submitted shop drawings. Contractor shall also provide all vents required to vent the air out of the piping prior to performing a hydrostatic test. Fittings for pressure gauges shall be located at the top of the risers. Vent fittings and pressure gauge fittings shall be shown on the submitted shop drawings.

D. 120-Hour Operational Tests:

1. For systems that run in the occupied mode and unoccupied mode (i.e. night setback conditions with a Building Management System and Direct Digital Control Systems), the 120 hour test shall consist of multiple contiguous occupied and unoccupied periods to verify that the systems perform the required sequence of operations in both the occupied and unoccupied time periods. The setup of the 120-hour Operational Testing shall be witnessed by the Commissioner.

E. Accepted Tolerance Levels:

During occupied and unoccupied periods, the control loops under test shall maintain control of the process variable within the following tolerances:

- Duct Static Pressure +/- 0.3 " wc
- Pump Head Pressure +/- 10% of control range
- Duct Temperature Loops +/- 2 degrees F
- Room Temperature Loops +/- 1 degree F
- Pipe Temperature Loops +/- 2 degrees F
- Duct Humidity +/- 2% rated error of transmitter
- Room Humidity +/- 2% rated error of transmitter

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Certified Test Equipment and Instruments: Type and kind shall be as required for the particular system under test. All gauges, instruments and test devices shall be provided with a certificate of calibration and calibration curve or letter indicating that a minimum of five (5) test points have been calibrated. The certificate and letter must show date of last calibration. The calibration date must be within a year of the testing date.
- B. Test Media (air, gas, refrigerant, water): As specified for the particular piping or system under test.
- C. Cleaning Agent (chemical solution, steam, water): As specified for the particular piping, apparatus or system being cleaned.

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- D. Glycol: Permanent type anti-freeze as manufactured by Dow Chemical Co. or Union Carbide.
- E. Contractor's Responsibility: The Contractor shall provide energy, fuel, oil, water, air, light and electrical instruments as required for all testing.

PART 3 - EXECUTION

3.01 PRELIMINARY WORK

- A. Thoroughly clean pipe and tubing prior to installation. During installation, prevent foreign matter from entering the systems. Prevent if possible and remove stoppages or obstructions from piping and systems.
- B. Thoroughly clean refrigerant pipe prior to pressure or vacuum testing.

3.02 CONTRACTOR'S RESPONSIBILITY

- A. The Contractor shall provide gas, refrigerant, energy, fuel, oil, water, air, light and electrical instruments as required for all testing, including testing associated with Special Inspections (unless otherwise noted).
- B. Although the City of New York will select Special Inspection Firms and pay for all Special Inspection services, the Contractor shall furnish labor, material, and instruments necessary to conduct all acceptance tests at no additional cost to the City of New York including testing associated with Special Inspections. Contractor shall provide access for Special Inspections and testing laboratory services.

3.03 PRESSURE TESTS - PIPING

- A. Apply tests as specified below. No work shall be covered or concealed before it is tested. Piping may be concealed after the hydrostatic test and an inspection of the position, pitch and allowance for expansion has been made.
- B. Hydrostatic Tests: hot water systems shall be tested at one and one half times the system design operating pressure, but not less than 100 pounds per square inch hydrostatic pressure maintained for at least 2-hours during the progress of installation. All leaks shall be properly eliminated. Caulking of leaky joints is not

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permitted. For testing purposes, end of piping to be tested shall be plugged or capped. Convectors, thermostatic vacuum traps, float-thermostatic traps, pneumatic valves and other equipments or apparatus which may be damaged by this hydrostatic test shall be excluded from the test.

3.04 TESTING OF EQUIPMENT, APPARATUS AND APPURTENANCES

- A. Hot Water Boilers: Perform field hydrostatic test at 30 psig, after installation, with piping connections shut-off.
- C. Pressure Vessels: Perform field hydrostatic test at 1.5 times the maximum operating pressure after installation with all piping connections shut-off.
- D. Boilers and pressure vessels shall be factory tested in accordance with the ASME Boiler and Pressure Code. Per MC 1011.1 Tests: Upon completion of the assembly and installation of boilers and pressure vessels, acceptance tests (above) shall be conducted in accordance with the requirements of the ASME Boiler and Pressure Vessel Code. Boilers shall not be placed in operation upon completion of construction until they have been inspected and tested and a Certificate of Compliance has been issued by the Commissioner. All final inspections and tests for boilers shall be made by a qualified boiler inspector in the employ of the department or a duly authorized insurance company as provided in Section 204 of the Labor Law of the State of New York. Equipment having a Btu input of not more than 350,000 Btu/h shall be exempt from this requirement. Where field assembly of pressure vessels or boilers is required, a copy of the completed low pressure H-2, high pressure P-2 or unfired pressure vessel U-1 Manufacturer's Data Report required by the ASME Boiler and Pressure Vessel Code shall be submitted to the department.
- E. Relief Valves: Increase pressure in equipment or apparatus to relief valve setting to test opening of valves at required relief pressures.
- F. Damper: The dampers, deflectors, and other items and accessories, shall be tested and adjusted during the balancing of systems work.
- G. Test gauges. An indicating test gauge shall be connected directly to the boiler or pressure vessel where it is visible to the operator throughout the duration of the test. The pressure gauge scale shall be graduated over a range of not less than one and one-half times and not

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greater than four times the maximum test pressure. All gauges utilized for testing shall be calibrated and certified by the test operator. Reference MC 1011.2.

3.05 HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS - CLEANING AND OPERATIONAL TESTING

A. Hot Water Systems

1. After the hot water systems installation has been completed, they shall be chemically cleaned. Notify the Commissioner 5-days in advance of starting the cleaning operation. In the presence of the Commissioner one of the following solutions shall be placed in the system and circulated: (1) Trisodium Phosphate - one pound for each fifty gallons of water in the system; (2) Sodium Carbonate -one pound for each thirty gallons of water in the system; or (3) Sodium Hydroxide (Lye) - one pound for each fifty gallons in the system. Their preference is in the order named, and a solution of only one type shall be used.
2. Fill, vent, and circulate this solution through the system, allowing it to reach design or operating temperature. After circulating for not less than 4-hours, the solution shall be drained completely from the system, strainers shall be cleaned, and the system shall be refilled with fresh water. The water shall be circulated for one hour, and, at that time, a sample of the water shall be tested for alkalinity in the presence of the Commissioner.
3. Operational Test: Run system in an automatic mode for a minimum of 120-Operational hours (after the final balancing as defined in Section 230594).

3.06 REFRIGERATION SYSTEMS (Reference: MC 1108, BC 1704.15)

- A. MC 1108.1 General: Every refrigerant-containing part of every system that is erected on the premises, except compressors, condensers, vessels, evaporators, safety devices, pressure gauges and control mechanisms that are listed and factory tested, shall be tested and proved tight after complete installation, and before operation. Tests shall include both the high-and low-pressure sides of each system at not less than the lower of the design pressures or the setting of the pressure relief device(s). The design pressures for testing shall be those listed on the condensing unit, compressor or compressor unit name-plate, as required by ASHRAE 15.

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Exceptions:

1. Systems using an A1 refrigerant erected on the premises with copper tubing not exceeding 5/8-inch (15.8 mm) OD, with wall thickness as required by ASHRAE 15, shall be tested in accordance with MC 1108.1, or by means of refrigerant charged into the system at the saturated vapor pressure of the refrigerant at 70°F (21°C) or higher.
- B. MC 1108.2 Test gases: Tests shall be performed with an inert-dried gas including, but not limited to, nitrogen and carbon dioxide. Oxygen, air, flammable gases and mixtures containing such gases shall not be used.

Exceptions:

1. Mixtures of dry nitrogen, inert gases, or a combination of them with nonflammable refrigerants in concentrations of a refrigerant weight fraction (mass fraction) not exceeding 5 are allowed for tests.
- C. MC 1108.3 Test apparatus: The means used to build up the test pressure shall have either a pressure-limiting device or a pressure-reducing device and a gauge on the outlet side.
- D. MC 1108.4 Declaration: A certificate of test shall be provided for all systems containing 55 pounds (25 kg) or more of refrigerant. The certificate shall give the name of the refrigerant and the field test pressure applied to the high-side and the low side of the system. The certification of test shall be signed by the installer and shall be made part of the public record.
- E. Operational Test: Run system in an automatic mode for a minimum of 120-Operational hours.

3.07 CHIMNEY AND BREECHING PRESSURE SMOKE TEST (Reference MC 810,
BC 1704.23 and 1704.24)

- A. After the completion of the stainless steel liner in the existing chimney and breeching, to determine the tightness of both constructions, a Smoke Test shall be made in accordance with the NYCDOB Building Code BC 1704.23 and BC 1704.24. The Commissioner shall witness all Smoke Tests. Independent Special Inspector retained by the City of New York shall additionally witness the Smoke Test. Perform the test when the building is not occupied. Isolate the boiler during the test. No work shall be covered or concealed before testing.
- B. MC 810.1 Test run: Chimneys shall be test run under operating conditions to demonstrate fire safety and the complete exhausting of smoke and the products of combustion to the outer air. The test run shall be witnessed by a registered design professional overseeing the test (i.e. Special Inspector), and the results of such test run shall be certified as correct by such professional and submitted in writing to the department.
- C. MC 810.2 Requirement of a smoke test: A smoke test shall be made as outlined below in MC 810.3. Any faults or leaks found shall be corrected by the Contractor. Such smoke test shall be witnessed by the Commissioner. In lieu thereof, the Commissioner may accept the test report of a registered design professional responsible for the test (Special Inspector) which shall be submitted in writing to the department.
- D. MC 810.3 Smoke test: To determine the tightness of chimney construction, a smoke test shall be made in accordance with the following conditions and requirements:
1. The equipment, materials, power and labor necessary for such test shall be furnished by, and at the expense of the Contractor who is the holder of the work permit. The City of New York will select HVAC Special Inspection Firm and pay for all Special Inspection services.
 2. If the test shows any evidence of leakage or other defects, such defects shall be corrected by the Contractor and the test shall be repeated until the results are satisfactory.
 3. The Contractor shall fill the breeching/chimney with a thick penetrating smoke produced by one or more smoke

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machines, or smoke bombs, or other equivalent method. As the smoke appears at the stack opening on the roof, such opening shall be tightly closed and a pressure equivalent to 1/2-inch (13 mm) column of water measured at the base of the stack, shall be applied. The test shall be applied for a length of time sufficient to permit the inspection of the chimney.

3.08 HVAC SYSTEM CLEANING

- A. The Contractor shall be responsible for the removal of visible surface contaminants and deposits from within the HVAC system as defined herein.

- C. The HVAC system includes any interior surface of the facility's air distribution system for conditioned spaces and/or occupied zones. This includes the entire heating, air-conditioning and ventilation system from the points where the air enters the system to the points where the air is discharged from the system. The return air grilles, return air ducts to the air handling unit (AHU), the interior surfaces of the AHU, mixing box, coil compartment, condensate drain pans, dehumidifiers, supply air ducts, fans, fan housing, fan blades, turning vanes, filters, filter housings, reheat coils, and supply diffusers are all considered part of the HVAC system. The HVAC system shall also include other components such as dedicated exhaust and ventilation components and make-up air systems.

- D. Post-Cleaning Report

At the conclusion of the cleaning, the Contractor shall provide a report to the Commissioner and Engineer of Record indicating the following:

- 1. Success of the cleaning project, as verified through visual inspection.

- 2. Areas of the system that were found to be damaged and/or needed repair which were remediated by the Contractor.

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SECTION 230594
BALANCING OF SYSTEMS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Section 230501, Basic HVAC Requirements, shall be referred to for general requirements. Section 230594 specifies requirements for the final adjusting and balancing of air and hydronic fluid distribution systems, including the equipment and devices associated with each system to produce the design objectives.
- B. The Work shall include checking installations for conformity to design, setting final flow and fan and pump speed, adjusting equipment and devices, recording data, preparing and submitting final balancing reports, and recommending modifications to the mechanical installations.
- C. The following related work is specified in other Sections, and is not part of the Work of this Section:
1. Installation and start-up of equipment and devices
 2. Pressure testing of piping and leakage testing ductwork systems.
 3. Electrical hook-up and wiring of equipment and devices
- D. Retain the services of an independent testing, adjusting, and balancing firm meeting the qualifications specified to be the single source of responsibility to test, adjust, and perform a final balance of the building mechanical systems specified and identified in this Project.

1.02 PERFORMANCE REQUIREMENTS

- A. Procedures, measurements, instruments and final reports for adjusting and balancing work shall comply with the applicable provisions of the codes, standards, recommendations of the following:
1. American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)
 2. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA) HVAC SYSTEMS Testing, Adjusting & Balancing Manual (latest edition)

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3. National Environmental Balancing Bureau (NEBB)
 4. Associated Air Balance Council (AABC)
 5. Testing, Adjusting and Balancing Bureau (TABB)
 6. International Training Institute (ITI) for the Sheet Metal and Air Conditioning Industry
 7. New York City Building Code
- B. The final air delivery or intake of each diffuser, grille and register shall be as designed or within 10% of the airflow rates shown on the Drawings.
- C. The final fan airflow rate and static pressure rise across the fan shall be within 10% above the design value at design speed.

1.03 JOB CONDITIONS

- A. Contractor shall have the balancing specialist review all the work with the respective manufacturers of the equipment and devices involved and shall coordinate all the Work. The balancing specialist shall examine the Drawings and Specifications to become familiar with Project requirements and to discover conditions in systems' designs that may preclude proper adjusting and balancing of systems and equipment.
- B. Provide balancing dampers, pressure taps, gauges, valves, and any other items and components as required for a properly balanced system, whether or not specified herein or shown on the Drawings, all at no additional cost to the City of New York. Adjustment or replacement of parts recommended by the balancing specialist shall be made in strict accordance with the respective manufacturer's recommendations.
- C. The Contractor shall set the adjustment of the automatically operated dampers, control valves and all the other items and accessories to operate.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

- A. Persons performing the Work of this Section shall be certified by NEBB, AABC, TABB. The testing, adjusting and balancing firm shall have a Professional Engineer licensed in the State of NY (on staff or a sub-consultant of the testing, adjusting and balancing firm) who shall sign and seal all the reports.

1.05 SUPPLEMENTAL SUBMITTALS

- A. Qualification Data: Submit copies of evidence that the firm and balancing specialist meet the qualifications specified in Supplemental Quality Assurance Article.
- B. Submit blank forms of reports indicating all data to be included and step-by-step procedures. All forms submitted shall be the standard forms issued by NEBB or AABC or as illustrated in the SMACNA HVAC SYSTEMS Testing, Adjusting & Balancing Manual. Custom made forms are not acceptable.

Sample of Report Forms:

Submit standard report forms according to AABC, NEBB or SMACNA standards as an example of the forms that will be submitted when the balancing report is completed. Forms shall include but not be limited to the following information:

- 1. Title Page:
 - a. Company name
 - b. Company address
 - c. Company telephone number
 - d. Project name
 - e. Project location
 - f. Project Contractor
 - g. Commissioner
- 2. Instrument List:
 - a. Instrument
 - b. Manufacturer
 - c. Model
 - d. Serial number
 - e. Range
 - f. Calibration date
- 3. System Diagrams: Include schematic layouts of air and hydronic distribution systems. Present each system with single-line diagram and include the following:
 - a. Quantities of outside, supply, return, and exhaust airflows
 - b. Water flow rates
 - c. Duct, outlet, and inlet sizes
 - d. Pipe and valve sizes and locations
 - e. Terminal units, including VAV
 - f. Balancing stations
 - g. Position of balancing devices

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4. Air Moving Equipment: (Supply Fans)
 - a. Location
 - b. Manufacturer
 - c. Model
 - d. Airflow, specified and actual
 - e. Return airflow, specified and actual
 - f. Outside airflow, specified and actual
 - g. Total static pressure (total external), specified and actual
 - h. Inlet pressure
 - i. Discharge pressure
 - j. Fan RPM

5. Exhaust Fan Data:
 - a. Location
 - b. Manufacturer
 - c. Model
 - d. Airflow, specified and actual
 - e. Total static pressure (total external) specified and actual
 - f. Inlet pressure
 - g. Discharge pressure
 - h. Fan RPM

6. Electric Motors:
 - a. Manufacturer
 - b. HP/BHP
 - c. Phase, voltage, amperage; nameplate, actual, no load
 - d. RPM
 - e. Service factor
 - f. Starter size, rating, heater elements

7. V-Belt Drive:
 - a. Identification/location
 - b. Required driven RPM
 - c. Driven sheave, diameter and RPM
 - d. Belt, size and quantity
 - e. Motor sheave, diameter and RPM
 - f. Center to center distance, maximum, minimum, and actual

8. Duct Traverse:
 - a. System zone/branch
 - b. Duct size
 - c. Area
 - d. Design velocity
 - e. Design airflow
 - f. Test velocity
 - g. Test airflow

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- h. Duct static pressure
- i. Air temperature
- j. Air correction factor

9. Variable Air Volume Boxes:

- a. Air-Handling unit identification.
- b. Location and zone.
- c. Type, non-fan powered or fan powered
- d. Area served
- e. Manufacturer
- f. Number from system diagram
- g. Type and model number
- h. Size.
- i. Design velocity
- j. Test (final) velocity
- k. Room Temperature, specified and actual
- l. Minimum static pressure
- m. Minimum design airflow
- n. Maximum design airflow
- o. Maximum actual airflow
- p. Inlet static pressure
- q. Entering-air temperature
- r. Leaving-air temperature

10. Air Distribution Test Sheet:

- a. Air outlets and inlets number
- b. Room number/location
- c. Outlets and inlets type
- d. Outlets and inlets size
- e. Area factor
- f. Design velocity
- g. Design airflow
- h. Test (final) velocity
- i. Test (final) airflow
- j. Percent of design airflow

11. Outlets and Inlets Unit Data:

- a. Manufacturer
- b. Type, constant, variable, single duct
- c. Identification/number
- d. Location
- e. Model
- f. Size
- g. Minimum static pressure
- h. Minimum design airflow
- i. Maximum design airflow
- j. Maximum actual airflow
- k. Inlet static pressure

12. Pump Data:

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- a. Identification/number
- b. Manufacturer
- c. Size/model
- d. Impeller
- e. Service
- f. Design flow rate, pressure drop, BHP
- g. Actual flow rate, pressure drop, BHP
- h. Discharge pressure
- i. Suction pressure
- j. Total operating head pressure
- k. Shut off, discharge and suction pressures
- l. Shut off, total head pressure

13. Air Cooled Condensers and Condensing Units:

- a. Identification/number
- b. Location
- c. Manufacturer
- d. Model
- e. Design and actual pressure drop, flow and temperatures.

14. Cooling Coil Data:

- a. Identification/number
- b. Location
- c. Service
- d. Manufacturer
- e. Airflow, design and actual
- f. Entering air DB temperature, design and actual
- g. Entering air WB temperature, design and actual
- h. Leaving air DB temperature, design and actual
- i. Leaving air WB temperature, design and actual
- j. Air pressure drop, design and actual

15. Heating Coil Data:

- a. Identification/number
- b. Location
- c. Service
- d. Manufacturer
- e. Airflow, design and actual
- f. Water flow, design and actual
- g. Water pressure drop, design and actual
- h. Entering water temperature, design and actual
- i. Leaving water temperature, design and actual
- j. Entering air temperature, design and actual
- k. Leaving air temperature, design and actual
- l. Air pressure drop, design and actual

- C. Submit copies of the marked-up Contract Drawings and Certificate of Conformance Certification that assures that the balancing specialist has performed their

contracted services in accordance with the applicable agency's (NEBB, AABC, TABB or ITI) standards and procedures. Copies of Contract Drawings shall be marked up and indicate outlet/inlet diffuser, register and grille identification.

- D. Submit certified reports signed by the licensed professional engineer of the balancing firm. Submit final testing and balancing results on applicable report forms, as approved and furnished by the agency that is certifying the independent member firm performing the Work. The certifying agencies' Instrument Calibration Report should be included in the submission of the completed final balancing forms. The reports shall be certified proof that the systems have been tested, adjusted and balanced; are an accurate representation of how the systems have been installed and are operating; and are an accurate record of all final quantities measured to establish normal operating values of the systems. Each final system report form shall bear the signature of the person performing the Work and the signature of the licensed professional engineer of the performing firm.
- E. Include in final reports uncorrected installation deficiencies noted during the process of adjusting and balancing and applicable explanatory comments.

1.06 SCHEDULING

- A. Perform balancing Work in the presence of the Commissioner.

PART 2 - PRODUCTS

2.01 PATCHING MATERIALS

- A. Unless otherwise shown on the Drawings, use same products as originally installed for patching holes in insulation, ductwork and housings that have been cut or drilled for test purposes, including access for test instruments, attaching jigs, and similar purposes.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Do not proceed with adjusting and final balancing until unsatisfactory conditions have been corrected in a manner approved by the balancing specialist and the Commissioner.

- B. Examine the air systems to see that they are free from obstructions. Determine that all dampers, grilles and registers are open, that moving equipment is lubricated, that clean filters are installed, automatic controls are functioning, and perform other inspection and maintenance activities necessary for proper operation of the systems.
 - 1. Examine terminal units, such as variable-air-volume boxes, to verify that they are accessible and their controls are connected and functioning.
- C. Examine the hydronic systems to see that they are free from abnormal obstructions, and that all piping, valves and equipment have been properly made fully operational. Determine that all equipment and control systems are performing correctly by functional testing.

3.02 BALANCING AND ADJUSTING - GENERAL REQUIREMENTS

- A. Notify the Commissioner when any deficiencies are detected, whether associated with design, installation, or equipment.
- B. Balancing specialist shall perform all the procedures and compile all the data for all air and hydronic systems. All standard forms (NEBB, AABC, or SMACNA) approved by the certifying agency (NEBB, AABC, TABB or ITI) shall be completed as applicable to the particular project. Missing or incomplete forms shall be justification to reject the balancing report.
- C. Data shall include a schematic diagram locating the air inlets, air outlets, variable-air volume boxes, fans, equipment, dampers and regulating devices for air systems, and a schematic diagram for location of balancing valves, flow indicators, equipment, and devices for hydronic systems.
- D. All instruments used shall be accurately calibrated and maintained in good working order.

3.03 AIR BALANCING

- A. The final adjusting and balancing of air systems shall include but not be limited to the following:
 - 1. Record and adjust fan rpm to design requirements.
 - 2. Record motor full load amperes.
 - 3. Make pitot tube traverse of main supply ducts and obtain design flow rate at fans.

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4. Record system static pressure, velocity pressure and total pressure.
 5. Adjust system for design supply, transfer and return airflow rate.
 6. Adjust system for minimum and maximum (economizer) design flow rates of outside air.
 7. Record return air temperatures.
 8. Record entering mix air temperatures.
 9. Record leaving air temperatures.
 10. Adjust all main supply, return, relief, and exhaust air ducts to proper design flow rate.
 11. Adjust each diffuser, grille and register.
 12. Each grille, diffuser and register shall be identified as to location and area on the schematic diagram.
 13. Size, type and manufacturer of diffusers, grilles and registers and all tested equipment shall be identified and listed in the final report. Manufacturer's data on all equipment shall be used to make required calculations for adjusting and balancing. Readings of diffusers, grilles and registers shall include design required and resultant velocity, required and resultant flow rate after adjustments.
 14. All diffusers, grilles and registers shall be adjusted to minimize drafts in all areas.
 15. Dampers shall be permanently marked after air balance is complete so that they can be restored to their correct position, if disturbed later.
 16. Openings in ductwork for pitot tube insertion shall be sealed with snap-in plugs after air balance is complete.
- B. Variable-Air-Volume Systems: After the fan systems have been adjusted, adjust the variable-air-volume systems as follows:
1. Set outside-air dampers at minimum, and return air dampers at a position that simulates full-cooling load.
 2. Select the terminal unit that is most critical to the supply-fan airflow and static pressure.

Measure static pressure. Adjust system static pressure so the entering static pressure for the critical terminal unit is not less than the sum of terminal-unit manufacturer's recommended minimum inlet static pressure plus the static pressure needed to overcome terminal-unit discharge system losses.

3. Measure total system airflow. Adjust to within indicated airflow.
4. Set terminal units at maximum airflow and adjust to deliver the designed maximum airflow. Use terminal-unit manufacturer's written instructions to make this adjustment. When total airflow is correct, balance the air outlets downstream from terminal units.
5. Set terminal units at minimum airflow and adjust to deliver the designed minimum airflow. Check air outlets for a proportional reduction in airflow. If air outlets are out of balance at minimum airflow, report the condition but leave outlets balanced for maximum airflow.
6. Measure static pressure at the most critical terminal unit and adjust the static-pressure controller at the main supply-air sensing station to ensure that adequate static pressure is maintained at the most critical unit.
7. Record the final fan performance data.

3.04 HYDRONIC SYSTEMS:

The adjusting and balancing of hydronic systems shall include but not limited to the following:

- A. Examine water in systems and determine if water has been treated and cleaned.
- B. Check expansion tank to determine that it is not air bound.
- C. Purge all air vents at high points of water systems, check automatic air vents and determine if they are operating properly.
- D. Coordinate with Temperature Controls Contractor for required heating temperature controls and corresponding automatic valve operation settings.
- E. Open all normally open valves to full open position. Set automatic valves to full coil flow.

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- F. Complete air balance shall have been accomplished before final water balance begins.
- G. Check water pumps for pump rotation and for proper flow rate delivery against manufacturers' pump curves.
- H. Set all balancing valves for required flow delivery at mains and branch mains to cooling and heating elements.
- I. Upon completion of final flow readings and adjustments of balancing valves, mark all settings and record data, so that they can be restored to their correct final "balanced" position, if disturbed later.
- J. After required heating temperature controls and balancing valve operation settings are made, recheck pump flow requirements and readjust system as required.
- K. Record pressure drop through coil at set flow rate of coil for full cooling and on full heating. Set pressure drop across bypass valve to match coil pressure drop.
- L. Record and check the following items at each heating element:
 - 1. Inlet water temperatures and static pressure at connections.
 - 2. Leaving water temperatures and the pressure drop of each coil.
 - 3. Flow rate through coil with control valve manually wide open.
- M. Record operating suction and discharge pressures of each pump and final total dynamic head and rated amperage versus actual amperage of pump motors.
- N. Record entering and leaving water temperatures and flow through all equipment and devices.
- O. Check and record all flow rates at all locations in the piping system with flow meters.

END OF SECTION

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SECTION 230701
PIPING INSULATION (HVAC)

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide thermal insulation on the piping (HVAC) required on this Project, as needed for a complete and proper installation; product specific requirements are contained here; section 230501, Basic HVAC Requirements, shall be referred to for general requirements.

All insulation materials shall be free of asbestos.

1.02 RELATED SECTIONS

- D. Division 23 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Schedule listing items to be insulated, description of insulation and finishing procedures

1.04 SUPPLEMENTAL QUALITY ASSURANCE

- A. Installer's Qualifications: Firm with at least three years successful installation experience on projects with mechanical insulations similar to that required for this Project.

B. Code and Standards

1. Per MC 1204.1 and MC 1204.2: Insulation characteristics: Pipe insulation installed in buildings shall conform to the requirements of the Energy Conservation Construction Code of New York State, shall be tested in accordance with ASTM E 84 and shall have a maximum flame spread index of 25 and a smoke developed index not exceeding 50. Insulation installed in an air plenum shall comply with MC 602.2.1. MC 602.2.1 requires that materials exposed within plenums shall be noncombustible or shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E 84.

Hydronic piping shall be insulated to the thickness required by the Energy Conservation Construction Code of New York State.

2. All insulation material shall be in accordance with the above ASTM E 84 requirements or have OTCR approval.

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3. Comply with ASTM, ASHRAE and New York State Energy Conservation Construction Code Standards.
4. Testing of material and equipment shall be in accordance with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department (MEA) before the effective date of the NYC Construction Codes may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.

1.05 TEMPERATURE REQUIREMENT

- A. Apply adhesive, sealers, coating, and all other items and accessories at the proper temperature as recommended by the manufacturer. If ambient conditions are not acceptable, provide temporary heat as required for proper installation without any delay to the Project completion.

1.06 COORDINATION

- A. Coordinate size and location of supports, hangers, and insulation shields
- B. Coordinate clearance requirements with piping installer for insulation application. Establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Approved Manufacturers:

Thermafiber
Knauf Fiber Glass (Permawick Pipe Insulation)
Johns Manville
Or approved equal.

2.02 MATERIALS

- A. Adhesives and Sealants for Insulation: All adhesives and sealants used on interior building insulation shall comply

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with the South Coast Air Quality Management District (SCAQMD) Rule #1168; VOC limits shall comply with the limits indicated in Table 1 of LEED Version 2.2, Indoor Environmental Quality Section, Credit EQ-4.1. Those limits correspond to an effective date of the SCAQMD Rule #1168 of July 1, 2005, and Rule Amendment date of January 7, 2005.

- B. Products shall not contain asbestos, lead, mercury, or mercury compounds.
- C. Foam insulation materials shall not use CFC or HCFC agents in the manufacturing process.
- D. Pipe Insulation
 - 1. One-piece molded sectional fiber glass insulation made from inorganic glass fibers bonded with a thermosetting resin shall have a nominal 4-pound density with a thermal conductivity (k) of not over 0.23 at 75° F. mean temperature. Insulations shall have factory-applied all-service jacket (ASJ) and adhesive used to adhere the jacket to the insulation. Insulation shall be suitable for use on piping up to 450° F. operating temperature.
 - 2. Preformed polyisocyanurate closed cell insulation with a k-factor of 0.19 at 75° F mean temperature and factory applied Polyvinylidene Chloride (PVDC) vapor retarder film for use in refrigerant lines the equal to Trymer 2000 with Saran Vapor Retarder by The Dow Chemical Company. The insulation thickness shall not exceed 1.0".
 - 3. Mineral-Fiber, Pipe Insulation Wicking System: Preformed pipe insulation made from inorganic glass fibers bonded with a thermosetting resin with absorbent cloth factory applied to the entire inside surface of preformed pipe insulation and extended through the longitudinal joint to outside surface of insulation under insulation jacket. Factory apply a white, polymer, vapor-retarder jacket with self-sealing adhesive tape seam and evaporation holes running continuously along the longitudinal seam, exposing the absorbent cloth. This type of wicking insulation shall be applied as an alternate to the cold piping (refrigerant) systems. Provide Knauf PermaWick Pipe Insulation or Owens Corning VaporWick Pipe Insulation (or equal).
 - 4. Fiberglass Paper-Free ASJ Pipe Insulation: Molded fibrous glass pipe insulation with factory applied paper free all service jacket and double adhesive lap seal closure system, rated for a maximum service temperature of 850°F. Circumferential joints shall be sealed with paper free butt strips that are compatible with the required facing. Stapling shall not be required to complete the closure. Manufacturer's data

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regarding thickness constraints in relation to operating temperature shall be followed. On cold systems, vapor barrier shall be provided. All penetrations and exposed ends of insulation shall be sealed with mold resistant vapor barrier mastic.

E. Jackets

1. Factory-applied: ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing. PVDC-SSL Jacket: PVDC jacket with a self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip. For cold water pipe insulation, the jackets shall be the vapor barrier type, ASJ or PVDC.
2. PVC Plastic: Zeston, one piece molded type fitting covers and jacketing material, gloss white. Connections: Tacks, pressure sensitive color matching vinyl tape.
3. Vapor barrier and weatherproofing jacket shall be a laminated five-ply self-adhesive material; temperature range: -30° F to 300° F; weather resistant; high puncture, tear resistant; product shall be used both indoors and outdoors; zero permeability; manufactured with mold inhibitors: VentureClad 1577CW-All Grade.
4. For outdoor pipe insulations, the jackets shall be made of 0.016" aluminum or stainless steel held with a friction type, Z-lock. The laminated self-adhesive vapor barrier and weatherproofing jacket, the equal to VentureClad 1577CW will also be accepted.

F. Insulation and accessories for valves, fittings, flanges etc. shall include the following:

1. One pound density fiberglass blanket.
2. Segments of pipe insulation.
3. Pre-molded fiberglass fittings.
4. No. 20 gage galvanized steel annealed wire.
5. Insulating cement.
6. In lieu of using coated pre-molded fittings for insulating fittings, valves etc., Zeston premolded 20-mil thick, high impact ultraviolet-resistant one piece PVC fitting covers and precut Hi-Lo-Temp insulation inserts as manufactured by Johns Manville are acceptable. For chilled water pipes and refrigerant

pipes/tubing, the use of prefabricated insulation for valves, fittings, flanges etc. manufactured by The Dow Chemical Company is acceptable. For cold piping systems (refrigerant lines), the use of the wicking type insulation for valves, fittings, flanges etc. manufactured by The Owens Corning is acceptable.

- G. Bands, staples, tapes, wires, cements, adhesives, sealers and protective finishes: As specified herein or as recommended by insulation manufacturer for proper uses on piping insulations.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Before applying the insulation, all tests specified in Division 23 Sections should have been completed acceptable to the Commissioner. However, thermal insulation can be applied to pipes prior to these tests providing that all fittings are left bare to permit detection and possible leaks.

3.02 SUPPLEMENTAL INSTALLATION

- A. Install insulation on pipe systems subsequent to testing and acceptance of tests.
- B. Install insulation materials with smooth and even surfaces. Insulate each continuous run of piping with full-length units of insulation, with single cut piece to complete run. Do not use cut pieces or scraps abutting each other.
- C. Clean and dry pipe surfaces prior to insulating. Butt insulation joints firmly together to ensure complete and tight fit over surfaces to be covered.
- D. Maintain integrity of vapor-barrier jackets on pipe insulation and protect to prevent puncture or other damage.
- E. Valves shall be insulated up to packing unit.
- F. Fire Seal Application: Where pipes pass through fire walls, fire partitions, fire rated pipe chase walls or floors above grade, insulation shall be interrupted and a fire seal shall be provided as specified in Section 078400: Firestopping.
- G. Extend piping insulation without interruption through walls, floors and similar piping penetrations, except where otherwise indicated.
- H. The temperature of the jacket shall not exceed 150° F.

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- I. Paper laminated jackets shall be permanently treated to retain the flame spread and smoke developed rating. Chemicals used for treating paper jacket laminates shall not be water soluble and shall be unaffected by water and humidity.
- J. Insulation on all cold surfaces must be applied with a continuous, unbroken vapor seal. Hangers, supports, anchors, etc., that are secured directly to cold surfaces must be adequately insulated and vapor sealed to prevent condensation.
- K. All surface finishes are to be extended to protect all surfaces, ends and raw edges of insulation.
- L. General valves, fittings, etc. shall be insulated as follows:
 - 1. For pipe sizes smaller than 4" wrap firmly under a minimum of a 3:1 compression, with 1 pound density fiberglass blanket, to a thickness equal to adjoining insulation. Secure with No. 20 gage galvanized annealed steel wire. Finish with a smooth coat of insulating cement.
 - 2. For pipe sizes 4" and larger, fit segments of pipe insulation equal in thickness to adjoining insulation and secure with No 20 gage galvanized annealed steel wire. Finish with a smooth coat of insulating cement.
 - 3. In lieu of the foregoing methods, the use of pre-molded fiberglass fittings of the same thickness of adjoining pipe insulation will be accepted. Finish with a smooth coat of insulating cement.
 - 4. In lieu of the foregoing methods, the use of preformed PVC fitting covers with factory precut Hi-Lo Temp insulation insert of the same thickness as adjoining pipe insulation will be accepted. Valves, fittings, etc. shall be insulated by applying the proper factory precut Hi-Lo Temp insulation insert to the pipe fitting, valve, etc. The ends of the Hi-Lo Temp insulation insert shall be tucked snugly into the throat of the fitting, valve etc. and the edges adjacent to the pipe covering tufted and tucked in, fully insulating the pipe fitting, valve, etc. Vapor barrier mastic compatible with the PVC shall be applied around the edges of the adjoining pipe insulation and on the fitting cover throat overlap seam. The PVC fitting cover shall then be applied and shall be secured with pressure sensitive tape along the circumferential edges. The tape shall extend over the adjacent pipe insulation and have an overlap on itself at least 2" on the downward side.
- M. Cold Piping: Install the fiberglass, closed cell or wicking type insulation with factory supplied vapor

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barrier jacket. The use of staples on vapor barrier jacketed insulation is not permitted. The use of vapor barrier and weather proofing jacket on cold water piping systems will be accepted.

N. Hot Piping: Install the fiber glass insulation with factory supplied jacket. Butt all joints firmly together and smoothly secure all jacket laps and joints strips with lap adhesive. Valves, fittings, etc. shall be insulated as specified in the Article 3.02.L.

O. Insulation and Protection at Points of Support

1. Install inserts made from rigid calcium silicate pipe insulation at all points of support. Inserts shall be not less than 12" long and of thickness equal to adjoining insulation. A jacket shall be installed over the insert with longitudinal laps and butt strips for circumferential joints smoothly secured with insulation adhesive. Jacket shall provide vapor barrier where required.

2. Install galvanized steel shields between supports and inserts. Shields shall be formed to fit the insulation and shall extend up to the centerline of the pipe and of the length specified for the inserts. Supports shall not pierce the insulation and all vapor barriers shall be unbroken and continuous.

3. In lieu of the foregoing methods, the use of factory fabricated saddle and shields specified in Section 230501 will be accepted.

R. Outdoor Piping

1. All exposed pipes shall be insulated in accordance with the hot or cold piping Paragraphs as required and shall further be protected with a weatherproof finish. Install aluminum, stainless steel, or laminated self-adhesive vapor barrier and weatherproofing jackets. Joints shall be sealed along the longitudinal seam and circumferential joints with butt strips, minimum 2" wide. Insulation shall be of the waterproof construction.

2. Fitting and valves shall be insulated with segments of the molded insulation and shall be covered using preformed aluminum or stainless steel fittings identical in composition to the jacket. All joints shall overlap 1" and shall be completely weather proof.

3.03 PROTECTION AND REPLACEMENT

A. Replace damaged insulation during construction that cannot be repaired satisfactorily, including units with vapor barrier damage and moisture saturated units.

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B. Protection: Insulation worker shall advise Contractor of required protection for insulation work during remainder of construction period, to avoid damage and deterioration.

3.04 SCHEDULE OF PIPE INSULATION

A. The following piping systems shall be insulated

1. Cold water, make-up water, supply and return piping for hot water systems. Bonnets of valves in hot water piping shall also be insulated.
2. Refrigerant piping.

B. Recommended Thickness: (per 2010 NYSECCC Table 503.2.8, based on insulation having a conductivity (k) not exceeding 0.27 BTU·in/ft²·°F·h)

Fluid	NOMINAL PIPE DIAMETER	
	≤1.5"	>1.5"
Hot Water/Dual Temp	1½"	2"
Refrigerant	1½"	1½"

END OF SECTION

SECTION 230702
EQUIPMENT INSULATION (HVAC)

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide thermal insulation on the equipment (HVAC) shown on the Drawings, specified herein and needed for a complete and proper installation. Product specific requirements are contained herein; Section 'General Conditions', shall be referred to for general requirements.

All insulation materials shall be free of asbestos.

1.02 RELATED SECTIONS

- A. Division 23 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Submit schedules showing manufacturer's product number, k-value, thickness and furnished accessories for each equipment requiring insulation.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

- A. Installer's Qualifications: Firm with at least three years successful installation experience on projects with mechanical insulations similar to that required for this Project.
- B. Code and Standards: Comply with NYC Construction Codes, ASHRAE Standards and New York City Energy Conservation Code **per Local Law 85/09** for materials and installation. All insulation materials shall be labeled in accordance with the identification requirements of MC 604.7 (at intervals not greater than 36 inches with the name of the manufacturer, the thermal resistance R-value at the specified installed thickness and the flame spread and smoke-developed indexes of the composite material) and shall have a flame spread index not more than 25 and a smoke developed index not more than 50 (per MC 604.3 and MC 604.5) when tested in accordance with ASTM E 84.

Testing of material and equipment shall be in accordance with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department

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(MEA) before the effective date of the NYC Construction Codes may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.

1.05 TEMPERATURE REQUIREMENT

- A. Apply adhesive, sealers, coating, and other items and accessories at the proper temperatures as recommended by the Manufacturer. If ambient conditions are not acceptable, provide temporary heat as required for proper installation without any delay to the Project completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Approved Manufacturers:

Knauf Fiber Glass.
Johns Manville
Owens-Corning Fiberglas Corp.
Approved equal

2.02 MATERIALS

- A. Adhesives and Sealants for Insulation: All sealants used on interior building insulation shall comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168; VOC limits shall comply with the limits indicated in Table 1 of LEED Version 2.2, Indoor Environmental Quality Section, Credit EQ-4.1. Those limits correspond to an effective date of the SCAQMD Rule #1168 of July 1, 2005, and Rule Amendment date of January 7, 2005.
- B. High density rigid fiber glass board insulation for equipment shall be ASTM C 612 Type IA or IB and shall have a thermal conductivity not exceeding 0.26 at 75 degrees F mean temperature. Block or board rigid fiber glass insulation for field applied **rectangular** breaching insulation shall have a density of 18.5 pcf and a thermal conductivity of 0.46 at 400 degrees F and shall be Type V, 2 inch thick per ASTM C 612 (Thermafiber K-FAC 19 or approved equal).
- C. Deleted.
- D. Jackets:
1. Provide pre-sized metal jacket except as otherwise shown on the Drawings. Metal jacketing shall be aluminum ASTM B 209, Alloys 1100, 30003, 3105 or 5005, Temper H14, 0.016 inch thick.

Factory pre-formed sectional pipe jacketing shall have a smooth outer finish with integral bonded laminated

polyethylene film - kraft moisture barrier underside, with Pittsburgh or modified Pittsburgh longitudinal lock seams. Joints shall have 2 inch overlapping circumferential joints sealed with 2 inch wide mastic backed aluminum snap bands.

Roll jacketing shall have a smooth outer finish with integral bonded laminated polyethylene film with kraft paper moisture barrier underside.

Sheet Jacketing shall be corrugated 1-1/4 inch x 1/4 inch deep with integral bonded laminated polyethylene film with kraft paper moisture barrier underside.

Metal jacketing fastener straps shall be Type 18-8 stainless steel, 0.020 inch thick, 1/2 inch wide.

2. Vapor barrier and weatherproofing jacket shall be a laminated five-ply self-adhesive material; temperature range: -30° F to 300° F; weather resistant; high puncture, tear resistant; product shall be used both indoors and outdoors; zero permeability; manufactured with mold inhibitors: VentureClad 1577CW-All Grade.
- E. Equipment Insulation Compounds: Provide adhesives, sealers, mastics and protective finishes as recommended by insulation manufacturer for applications indicated.
- F. Equipment Insulation Accessories: Provide staples, wire netting, tape, anchors and stud pins as recommended by insulation manufacturer for applications indicated.
- G. Cements:
1. Fibrous Glass Thermal Insulating Cement: Asbestos free; ASTM C 195
 2. Fibrous Glass Hydraulic Setting Thermal Insulating and Finishing Cement per ASTM C 449/C 449M.
- H. Wire and Bands:
1. Binding and Lacing Wire: Nickel copper alloy or copper clad steel, gauge as specified
 2. Bands: Galvanized steel, 1/2 inch wide x 0.015 inch thick, with 0.032 inch thick galvanized wing seals.
- I. Metal Corner Angles: galvanized steel, 2 x 2 inch 28 gauge

PART 3 - EXECUTION

3.01 COMPLETION OF TESTS

- A. Before applying the insulation, all tests specified in Division 15 Sections should have been completed. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to the Commissioner.

3.02 SUPPLEMENTAL INSTALLATION

- A. Install insulation materials with smooth and even surfaces and on clean and dry surfaces. Redo poorly fitted joints. Do not use mastic or joint sealer as filler for gaping joints and excessive voids resulting from poor workmanship.
 - B. Insulation shall not be applied until the pumps and tanks has been connected, tested, and found to be operating satisfactorily. All surfaces of the pumps and tanks to be insulated shall be clean and dry.
 - C. Do not insulate handholes, cleanouts, ASME stamp, and manufacturer's nameplate. Provide neatly beveled edge at interruptions of insulation.
 - D. Provide removable insulation sections to cover parts of equipment which must be opened periodically for maintenance; include metal vessel covers, fasteners, flanges, frames and accessories.
 - E. Equipment Exposed to Weather: Protect outdoor insulation from weather by installation of weather-barrier mastic protective finish, or laminated self-adhesive weatherproofing jacketing, as recommended by manufacturer.
 - F. Deleted.
 - G. Install equipment high-density Type IA or IB rigid fiberglass block or board. Insulation shall be held in place with No. 16 gauge soft annealed or galvanized steel wire. Joints and voids in the insulation shall be filled with mineral wool cement. Joints and breaks in the vapor barrier for cold equipment shall be sealed by applying vapor barrier coating. Finish shall consist of embedding open weave glass fabric (20 x 20) into a wet coating overlapping the seams at least 2". A finish coat shall then be applied to the entire insulated surface.
 - H. **Rectangular** Boiler Smoke Breeching shall be insulated with Type V rigid fiber glass block or board in accordance with the following:
 - 1. Type V Rigid Fiber Glass Block or Board Insulation: Secure insulation in place with wire or galvanized steel bands unless otherwise specified.
 - Small Areas: Secure insulation with 16 gauge wire on maximum 6 inch centers
 - Large Areas: Secure insulation with 14 gauge wire or 0.015 inch thick by ½ inch wide galvanized steel bands on maximum 10 inch centers.
- Stagger insulation joints. On irregular surfaces, where

application of block or board insulation is not practical, insulate with insulating cement built-up to same thickness as adjoining insulation. Fill joints, voids and irregular surfaces with insulating cement, to a uniform thickness.

Install aluminum roll jacketing on insulated surfaces of round smoke breeching. Install aluminum sheet jacketing on insulated surfaces of rectangular breeching.

Lap longitudinal and circumferential joints a minimum of 2 inches. Secure jacketing in place with $\frac{1}{2}$ inch by 0.020 inch thick stainless steel bands and stainless steel wing type seals, on maximum 12 inch centers. Terminate exposed ends of insulation with insulating cement trowelled down to metal surface on a bevel.

3.04 PROTECTION AND REPLACEMENT

- A. Replace damaged insulation during construction that cannot be repaired satisfactorily, including units with vapor barrier damage and moisture saturated units.
- B. Protection: Insulation shall be protected during the remainder of the construction period, to avoid damage and deterioration.

3.05 EXISTING INSULATION REPAIR

- A. Repair damaged sections of existing mechanical insulation, both previously damaged and damaged during construction. Use insulation of same thickness as existing insulation, install new jacket lapping and sealed over existing.
- B. Repair insulation with the same type of materials and thickness in building alteration work where existing equipment insulation is removed and/or damaged due to equipment repair or alteration.

3.06 SCHEDULES FOR EQUIPMENT INSULATION

- A. Hot Equipment (Above Ambient Temperature):
 - 1. Air Separator Tanks

Insulate each item of equipment specified above with the following type: Type IA or IB fibrous glass mineral fiber insulation 2" thick
- B. **Rectangular** Breeching between boiler outlet and chimney connection: Insulate breeching with 2" thick Type V rigid fiber glass block or board.

END OF SECTION

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SECTION 230703
DUCTWORK INSULATION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide thermal insulation on the ductwork installed and required on this Project shown on the Drawings, specified herein and needed for a complete and proper installation. Product specific requirements are contained herein; Section 230501, Basic HVAC Requirements, shall be referred to for general requirements.

All insulation materials shall be free of asbestos.

1.02 RELATED SECTIONS

- A. Division 23 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Submit schedule showing manufacturer's product number, k-value, thickness and furnished accessories for each duct system requiring insulation.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

- A. Installer's Qualifications: Firm with at least three years successful installation experience on projects with mechanical insulations similar to that required for this Project.
- B. Flame/Smoke Ratings: Provide mechanical insulation with flame spread index of 25 or less and smoke developed index of 50 or less, as tested by ASTM E-84 method and as defined in the NYC Mechanical Code. Insulation shall not flame, glow, smolder or smoke when tested in accordance with ASTM C 411 at the temperature to which they are exposed in service or a minimum of 250F per MC 604.3.
- C. Code and Standards: Comply with New York City Construction Code, New York State Energy Conservation Construction Code and ASHRAE Standards.
- D. Identification: External duct insulation and factory-insulated flexible duct shall be legibly printed or identified at intervals not greater than 36 inches with the name of the manufacturer, the thermal resistance R-value at the specified installed thickness and the flame spread and smoke-developed indexes of the composite material per MC 604.7.
- E. Testing of material and equipment shall be in accordance

with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department (MEA) before the effective date of the NYC Construction Codes may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Approved Manufacturers:

Knauf Fiber Glass.
Johns Manville
Owens-Corning Fiberglass Corp.
Or approved equal

2.02 MATERIALS

- A. Adhesives and Sealants for Insulation: All sealants used on interior building insulation shall comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168; VOC limits shall comply with the limits indicated in Table 1 of LEED Version 2.2; Indoor Environmental Quality Section, Credit EQ-4.1. Those limits correspond to an effective date of the SCAQMD Rule #1168 of July 1, 2005, and Rule Amendment date of January 7, 2005.
- B. Board Type: Fiberglass board: 3-lb minimum density, thermal conductivity not exceeding 0.23 at 75o F mean temperature, factory applied facing of aluminum foil reinforced with fiberglass yarn mesh and laminated to 40 lb kraft paper chemically treated to give the permanent flamespread and smoke-developed characteristics required. The use of plain (unfaced) fiberglass board on ductwork serving only as heating supply ducts is also acceptable.
- C. Flexible Type: Flexible (blanket) type fiberglass: 1-lb nominal density, thermal conductivity not exceeding 0.29 at 75o F mean temperature; factory applied foil reinforced kraft facing as specified for the fiberglass board.

- D. Asbestos free rigid hydrous calcium or magnesium silicate block shall be lightweight with thermal conductivity not exceeding 0.42 at 200° F mean temperature.
- E. Calcium-Magnesium-Silicate (CMS) Wool Wrap: CMS wool wrap blanket insulation shall be flexible, high temperature rated and shall have Omega Point Labs (OPL) or UL listing in accordance with ASTM E 2336 (or OTCR approval). The insulation blanket shall be fully encapsulated in an aluminum foil fiberglass reinforced scrim covering. Provide Unifrax Corporation FyreWrap EZ1.5; 3M Fire Barrier Duct Wrap15A; Thermal Ceramics FireMaster FastWrap+ or approved equal. Blanket insulation shall have NYC OTCR approval or Omega Point Labs (OPL) or UL listing in accordance with ASTM E 2336.
- F. Jackets for Ductwork Insulation: ASTM C-921; Type I for ductwork with temperatures below ambient; Type II for ductwork with temperatures above ambient. (Type I-Vapor Barrier, Type II-Water Vapor Permeable).
- G. Ductwork Insulation Accessories: Provide staples, bands, wires, tape, anchors, corner angles and all other items and accessories recommended by insulation manufacturer for applications indicated.
- H. Ductwork Insulation Compounds: Provide cements, adhesives, coatings, sealers, protective finishes and all other items and compounds recommended by insulation manufacturer for applications indicated.
- I. Vapor barrier and weatherproofing jacket shall be a laminated five-ply self-adhesive permanent acrylic system; suitable operating range from -30° F to 300° F; weather resistant; high puncture, tear resistant; product shall be used both indoors and outdoors; zero permeability; manufactured with mold inhibitors: VentureClad 1577CW-All Grade.

PART 3 - EXECUTION

3.01 COMPLETION OF TESTS

- A. Before applying the insulation, all tests specified in Division 23 Sections should have been completed. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to the City of New York.

3.02 SUPPLEMENTAL INSTALLATION

- A. Omit insulation if duct is internally lined with acoustic material of sufficient thermal conductivity providing a conductive resistance as required by the New York State Energy Conservation Construction Code. Materials used as

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internal insulation and exposed to the air stream in ducts shall be shown to be durable when tested in accordance with UL 181. Exposed internal insulation that is not impermeable to water shall not be used to line ducts or plenums from the exit of a cooling coil to the downstream end of the drain pan. (Reference MC 604.13). Omit insulation on ductwork where the design temperature difference between interior and exterior of duct does not exceed 15 degrees F (such as in return air plenums) per the 2007 NYSECCC Article E803.2.8.

- B. Duct coverings shall not penetrate a wall or floor required to have a fire resistance rating or required to be fireblocked per MC 604.6. Linings shall be interrupted at the area of operation of a fire damper and at a minimum of 6" upstream of and 6" downstream of electric resistance and fuel burning heaters in a duct system. Metal nosings or sleeves shall be installed over exposed duct liner edges that face opposite the direction of airflow per MC 604.8.
- C. Fiberglass board shall be used to insulate ductwork that is exposed in fan or equipment rooms or spaces where the design temperature difference between interior and exterior of duct exceeds 15 degrees F per the 2007 NYSECCC Article E803.2.8.
- D. Flexible type duct insulation shall be used to insulate ductwork which is installed in concealed spaces (hung ceilings, furred spaces, pipe and duct spaces, crawl spaces and tunnels) where the design temperature difference between interior and exterior of duct exceeds 15 degrees F per the 2007 NYSECCC Article E803.2.8.
- E. Facing and Finishing:
 - 1. Exposed Ducts: Insulation on ductwork exposed to view in Boiler Room, Boiler Room Area, Equipment and Mechanical Rooms, and shall have facing or finish as specified herein: Facing or finish shall be reinforced with metal corner beads and shall have a glass cloth finish installed in the following manner: Brush a full coat of lagging adhesive on all surfaces of the ductwork insulation. Imbed glass cloth in the wet coating, smoothing to avoid wrinkles. Overlap cloth seams 4", locating seams so as to be hidden from view, wherever practicable. Apply a second coat of lagging adhesive.
 - 2. Concealed Ducts: Insulation on warm air ductwork installed within pipe and duct spaces, storerooms, hung ceilings, furred spaces, or pipe tunnels shall have no additional finishing, other than the foil-reinforced-kraft facing. All cold air ductwork for the above spaces shall be provided with two coats of a

vapor retardant coating at least 1/16" thick with a layer of glass cloth in between or vapor barrier and weatherproofing jacket.

F. Installation of Board Type Insulation

1. Insulation shall be applied with edges tightly butted. It shall be impaled on pins welded to the duct and secured with speed clips impaled over the pins. Pins shall be cut off close to speed clips. On horizontal ducts, pins shall be spaced not less than one per square foot for the bottom surface, and not less than one per two square feet on the sides and top surface. On vertical ducts, the pins shall be spaced not less than one clip per two square feet of duct surface. For faced insulation, point all joints and cracks with vapor barrier coating, and seal all joints and speed clips with a 3" wide strip of foil-reinforced-kraft facing adhered with insulation adhesive. The use of pressure sensitive tape of the same facing material also is acceptable for this purpose. For cold air ductwork, the laminated self-adhesive vapor barrier and weatherproofing jacket will be accepted.
2. Where, because of space or size restriction, the welded pin method cannot be used, the use of stick clips will be approved and the insulation shall be additionally secured to the duct with insulation adhesive. The adhesive shall cover the entire surface of the sheet metal when applied to underside of horizontal duct, but may be applied in strips for application to top and sides with a minimum of 50% coverage. Insulation shall be additionally secured with No. 16 gage soft annealed galvanized steel wire on not more than 12" centers. Continuous metal, corner angles shall be used to protect edges of the insulation.

- G. Installation of Flexible Type Insulation: Flexible type insulation shall be cut slightly longer than the perimeter of the duct to insure full thickness at corners. Insulation shall be applied with edges tightly butted, and seams stapled approximately 6" on centers with outward clinching staples. Insulation shall be additionally secured with No. 16 gage soft annealed galvanized steel wire on not more than 12" centers. When the width of a horizontal duct is 24" or more, the insulation shall also be fastened with welded pins or stick clips spaced on 18" centers on the bottom surface of the duct. All joints and clips shall be taped and sealed with 3" wide strips of foil-reinforced-kraft facing applied with insulation adhesive. The use of pressure sensitive tape of the same facing material also is acceptable for this purpose. For cold air ductwork the laminated self-adhesive vapor barrier and weatherproofing jacket will be accepted.

- H. Insulation for Outdoor Ductwork: Outdoor ductwork shall be insulated with board type insulation having a vapor barrier consisting of two coats of a vapor retardant coating, at least 1/16th inch thick with a layer of glass cloth in between. After the insulation has been installed, it shall be covered with an aluminum jacket conforming to ASTM B209, 3003 alloy, H-14 temper, 0.020 inches thick with 1-1/4 inches corrugations or 0.032 inches thick with no corrugations. Jacket shall use lock joint or other approved system for a continuous weather tight system. A 2" overlap is required at longitudinal and circumferential joints. The use of vapor barrier and weatherproofing jacket in lieu of the vapor barrier coating and aluminum jacket will be accepted. Access doors and other items requiring maintenance or access shall be removable and sealable.
- I. Clean and dry ductwork prior to insulating. Butt insulation joints firmly together to ensure complete and tight fit over surfaces to be covered.
- J. Maintain integrity of vapor-barrier on ductwork insulation, and protect it to prevent puncture and other damage.
- K. Extend ductwork insulation without interruption through walls, floors and similar ductwork penetrations, except where otherwise indicated such as rated penetrations.

3.03 EXISTING INSULATION REPAIR

- A. Repair damaged or removed sections of existing duct insulation, both previously damaged/removed and damaged/removed during construction. Use insulation of same type and thickness as existing insulation, install new jacket lapping and sealed over existing.

3.04 PROTECTION AND REPLACEMENT

- A. Replace damaged insulation that cannot be repaired satisfactorily, including units with vapor barrier damage and moisture saturated units.
- B. Protection: Insulation Worker shall advise Contractor of required protection for insulation work during remainder of construction period, to avoid damage and deterioration.

3.05 SCHEDULES OF DUCTWORK INSULATION

- A. Insulation Omitted: Do not insulate the following:
1. Access door, test hole fittings, damper quadrants, except as otherwise specified. The adjoining insulation shall be neatly finished around such devices.

2. Exhaust ductwork need not be insulated, except the portion of the duct between motorized spill damper and spill louver.
- B. Exposed Ducts/Plenums in Boiler Room, Boiler Room Area, Equipment and Mechanical Rooms (Article applies to hot and cold ducts where the design temperature difference between interior and exterior of duct exceeds 15 degrees F per the 2007 NYSECCC Article E803.2.8.):
1. Insulate
 - a. All outside air intake plenums not pre-insulated at the factory.
 - b. Outdoor air intake ducts in their entirety.
 - c. Exhaust duct from motorized spill damper to spill louver.
 - d. Supply and return ducts
 - e. Heating plenums not pre-insulated at the factory
 2. Insulate the above with rigid fiberglass board, 2" thick.
- C. Insulate the following where the design temperature difference between interior and exterior of duct exceeds 15 degrees F per the 2007 NYSECCC Article E803.2.8:
1. Dual Temperature Ductwork: Concealed hot/cold supply and return ductwork between fan discharge or HVAC unit discharge and room terminal inlets and outlets.
 2. Insulate system specified above with the following:
 - a. Flexible Fiberglass: 2" thick, application limited to concealed locations.

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SECTION 230923
TEMPERATURE CONTROL SYSTEM WITH WEB-BASED BUILDING MANAGEMENT

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Furnish all labor, materials, equipment, and service necessary for a complete and operating Temperature Control System (TCS) and Building Management System (BMS), utilizing Direct Digital Controls as shown on the drawings and as described herein. Drawings are diagrammatic only.
- B. All labor, material, equipment and software not specifically referred to herein or on the plans, that is required to meet the functional intent of this specification, shall be provided without additional cost to the City of New York.

1.02 SYSTEM DESCRIPTION

- A. The entire Temperature Control System (TCS) shall be comprised of a network of interoperable, stand-alone digital controllers and/or of commercial programmable thermostats communicating via LonMark/LonTalk communication protocols to a Network Area Controller (NAC).
- B. The Building Management System (BMS) shall be comprised of Network Area Controller or Controllers (NAC) within the facility. The NAC shall connect to the City of New York local area network. Access to the system shall be accomplished through standard Web browsers, via the Internet and local area network. Each NAC shall communicate to LonMark/LonTalk (IDC) controllers and other open protocol systems/devices.
- C. The Building Management System (BMS) as provided in this Division shall be based on the Honeywell WEBS System incorporating the Niagara Framework™.

Other acceptable BMS manufacturers:

- 2. Trane Tracer SM
- 3. Approved equal compatible with new and existing DDC controllers as described on Dwg. M-008.

1.03 GENERAL

- A. The Temperature Control System (TCS) and Building Management System (BMS) shall be comprised of a network of interoperable, stand-alone digital controllers and/or communicating thermostats, a computer system, graphical user interface software, network devices, valves, dampers, sensors, and other devices as specified herein.

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- B. The installed system shall provide secure password access to all features, functions and data contained in the overall BMS.

1.04 SUBMITTAL

- A. Five copies of shop drawings of the components and devices for the entire control system shall be submitted and shall consist of a complete list of equipment and materials, including manufacturers catalog data sheets and installation instructions for all controllers, valves, dampers, sensors, etc. Shop drawings shall also contain complete wiring and schematic diagrams, software descriptions, calculations, and any other details required to demonstrate that the system has been coordinated and will properly function as a system. Terminal identification for all control wiring shall be shown on the shop drawings. A complete written Sequence of Operation shall also be included with the submittal package. Catalog data sheets, wiring diagrams and point lists shall be provided for proper coordination of work.
- B. Submittal shall also include a complete point list of all points to be connected to the TCS and BMS, protocol documentation, and factory support information for systems provided and integrated into the BMS.
- C. Submittal shall also include a copy of each of the graphics developed for the Graphic User Interface including a flowchart (site map) indicating how the graphics are to be linked to one another for system navigation. The graphics are intended to be 80% - 90% complete at this stage with the only remaining changes to be based on review comments from the A/E design team and/or City of New York.
- D. Upon completion of the work, provide a complete set of 'as-built' drawings and application software on compact disk. Drawings shall be provided as AutoCAD[™] compatible files. Five copies of the 'as-built' drawings shall be provided in addition to the documents on compact disk.

1.05 SPECIFICATION NOMENCLATURE

- A. Acronyms used in this specification are as follows:
- | | |
|-----|----------------------------|
| BMS | Building Management System |
| TCS | Temperature Control System |

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NAC	Network Area Controller
IDC	Interoperable Digital Controller
GUI	Graphical User Interface
WBI	Web Browser Interface
DDC	Direct Digital Controls
LAN	Local Area Network
OOT	Object Oriented Technology

1.06 CONTRACTOR'S RESPONSIBILITIES

- A. The contractor shall be responsible for all controllers, thermostats, control devices, control panels, controller programming, controller programming software, controller input/output, low voltage power wiring and controller network wiring.
- B. The contractor shall be responsible for the Network Area Controller(s) (NAC), software and programming of the NAC, graphical user interface software (GUI), development of all graphical screens, Web browser pages, setup of schedules, logs and alarms, LonWorks network management and connection of the NAC to the local area network.

1.07 RELATED WORK SPECIFIED ELSEWHERE

- A. Electrical:
 - 1. Providing motor starters and disconnect switches (unless otherwise noted).
 - 2. Power wiring and conduit (unless otherwise noted).
 - 3. Provision, installation and wiring of smoke detectors (unless otherwise noted).
 - 4. Other equipment and wiring.

1.08 SOFTWARE LICENSE AGREEMENT

- A. The City of New York /HSA shall agree to the manufacturer's standard software and firmware licensing agreement as a condition of this contract. Such license shall grant use of all programs and application software to City of New York as defined by the manufacturer's license agreement, but shall protect manufacturer's rights to disclosure of trade secrets contained within such software.

- B. The City of New York shall be the named license holder of all software associated with any and all incremental work on the project(s). In addition, the City of New York shall receive usership of all job specific configuration documentation, data files, and application-level software developed for the project. This shall include all custom, job specific software code and documentation for all configuration and programming that is generated for a given project and/or configured for use with the NAC, BMS Server(s), and any related LAN / Intranet and Internet connected routers and devices. Any and all required IDs and passwords for access to any component or software program shall be provided to the City of New York.

1.09 DELIVERY, STORAGE AND HANDLING

- A. Provide factory-shipping cartons for each piece of equipment and control device. Maintain cartons through shipping, storage and handling, as required to prevent equipment damage. Store equipment and materials inside and protected from weather.

PART 2 - MATERIALS

2.01 OPEN, INTEROPERABLE, INTEGRATED ARCHITECTURES

- A. The intent of this specification is to provide a peer-to-peer networked, stand-alone, distributed control system with the capability to integrate LonWorks technology and other open and proprietary communication protocols in one open, interoperable system.
- B. The supplied computer software shall employ object-oriented technology (OOT) for representation of all data and control devices within the system. In addition, adherence to industry standards including ANSI / ASHRAE™ Standard 135-2001, BACnet and LonMark to assure interoperability between all system components is required.
- C. All components and controllers supplied under this Division shall be true "peer-to-peer" communicating devices. Components or controllers requiring "polling" by a host to pass data shall not be acceptable.
- D. The supplied system must incorporate the ability to access all data using standard Web browsers without requiring proprietary operator interface and configuration programs. An Open DataBase Connectivity (ODBC) or Structured Query Language (SQL) compliant server database is required for all system database parameter storage. This data shall reside on a supplier-installed server for all database access.

Systems requiring proprietary database and user interface programs shall not be acceptable.

- E. A hierarchical topology is required to assure reasonable system response times and to manage the flow and sharing of data without unduly burdening the customer's internal Intranet network. Systems employing a "flat" single tiered architecture shall not be acceptable.
1. Maximum acceptable response time from any alarm occurrence (at the point of origin) to the point of annunciation shall not exceed 5 seconds for network connected user interfaces.
 2. Maximum acceptable response time from any alarm occurrence (at the point of origin) to the point of annunciation shall not exceed 60 seconds for remote or dial-up connected user interfaces.

2.02 NETWORKS

- A. The Local Area Network (LAN) shall be a 100 Megabits/sec Ethernet network supporting Java®, XML, HTTP, and SOAP for maximum flexibility for integration of building data with enterprise information systems and providing support for multiple Network Area Controllers (NACs), workstations and, if specified, a local server.
- B. LAN minimum physical and media access requirements:
1. Ethernet; IEEE standard 802.3.
 2. Cable; 100 Base-T, UTP-8 wire, category 5.
 3. Minimum throughput; 100 Mbps.

2.03 NETWORK ACCESS

- A. Remote Access.
1. For Local Area Network (LAN) installations, provide access to the LAN from a remote location, via the Internet. The City of New York shall provide a connection to the Internet to enable this access via high-speed cable modem, asynchronous digital subscriber line (ADSL) modem, ISDN line, T1 Line or via the customer's Intranet to a corporate server providing access to an Internet Service Provider (ISP).

2.04 NETWORK AREA CONTROLLER (NAC)

- A. The Contractor shall supply one or more Network Area Controllers (NAC) as part of the contract. Number of

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area controllers required is dependent on the type and quantity of devices. It is the responsibility of the contractor to determine the quantity and type of devices..

- B. The Network Area Controller (NAC) shall provide the interface between the LAN and the field control devices, and provide global supervisory control functions over the control devices connected to the NAC. It shall be capable of executing application control programs to provide:
1. Calendar functions
 2. Scheduling
 3. Trending
 4. Alarm monitoring and routing
 5. Time synchronization
 6. Integration of LonWorks controller data and BACnet controller data
 7. Network Management functions for all LonWorks based devices
- C. The Network Area Controller must provide the following hardware features as a minimum:
1. One Ethernet Port - 10/100 Mbps
 2. One RS-232 port
 3. One LonWorks Interface Port - 78KB FTT-10A
 4. One RS-485 ports
 5. Battery Backup
 6. Flash memory for long term data backup (If battery backup or flash memory is not supplied, the controller must contain a hard disk with at least 1 gigabyte storage capacity)
 7. The NAC must be capable of operation over a temperature range of 32 to 122°F
 8. The NAC must be capable of withstanding storage temperatures of between 0 and 158°F
 9. The NAC must be capable of operation over a humidity range of 5 to 95% RH, non-condensing.
- D. The NAC shall provide multiple user access to the system and support for ODBC or SQL. A database resident on the NAC shall be an ODBC-compliant database or must provide an ODBC data access mechanism to read and write data stored within it.
- E. The NAC shall support standard Web browser access via the Intranet/Internet. It shall support a minimum of 32 simultaneous users.
- F. Event Alarm Notification and actions:

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1. The NAC shall provide alarm recognition, storage; routing, management, and analysis to supplement distributed capabilities of equipment or application specific controllers.
 2. The NAC shall be able to route any alarm condition to any defined user location whether connected to a local network or remote via dial-up telephone connection, or wide-area network.
 3. Alarm generation shall be selectable for annunciation type and acknowledgement requirements including but limited to:
 - a. To alarm
 - b. Return to normal
 - c. To fault
- G. Control equipment and network failures shall be treated as alarms and annunciated.
- H. Alarms shall be annunciated in any of the following manners as defined by the user:
1. Screen message text
 2. Email of the complete alarm message to multiple recipients. Provide the ability to route and email alarms based on:
 - a. Day of week
 - b. Time of day
 - c. Recipient
 3. Pagers via paging services that initiate a page on receipt of email message
 4. Graphic with flashing alarm object(s)
 5. Printed message, routed directly to a dedicated alarm printer
- I. The following shall be recorded by the NAC for each alarm (at a minimum):
1. Time and date
 2. Location (building, floor, zone, office number, etc.)
 3. Equipment (air handler #, accessway, etc.)
 4. Acknowledge time, date, and user who issued acknowledgement.
 5. Number of occurrences since last acknowledgement.
- J. Alarm actions may be initiated by user defined programmable objects created for that purpose.
- K. Defined users shall be given proper access to acknowledge any alarm, or specific types or classes of alarms defined by the user.

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- L. A log of all alarms shall be maintained by the NAC and/or a server (if configured in the system) and shall be available for review by the user.
- M. Provide a "query" feature to allow review of specific alarms by user defined parameters.
- N. A separate log for system alerts (controller failures, network failures, etc.) shall be provided and available for review by the City of New York.
- O. An Error Log to record invalid property changes or commands shall be provided and available for review by the City of New York.
- P. The NAC shall be Honeywell WEB-301 or approved equal.

2.05 DATA COLLECTION AND STORAGE

- A. The NAC shall have the ability to collect data for any property of any object and store this data for future use.
- B. The data collection shall be performed by log objects, resident in the NAC that shall have, at a minimum, the following configurable properties:
 - 1. Designating the log as interval or deviation.
 - 2. For interval logs, the object shall be configured for time of day, day of week and the sample collection interval.
 - 3. For deviation logs, the object shall be configured for the deviation of a variable to a fixed value. This value, when reached, will initiate logging of the object.
 - 4. For all logs, provide the ability to set the maximum number of data stores for the log and to set whether the log will stop collecting when full, or rollover the data on a first-in, first-out basis.
 - 5. Each log shall have the ability to have its data cleared on a time-based event or by a user-defined event or action.
- C. All log data shall be stored in a relational database in the NAC and the data shall be accessed from a server (if the system is so configured) or a standard Web browser.
- D. All log data, when accessed from a server, shall be capable of being manipulated using standard SQL statements.
- E. All log data shall be available to the City of New York in the following data formats:
 - 1. HTML
 - 2. XML

3. Plain Text
 4. Comma or tab separated values
- F. The NAC shall have the ability to archive its log data either locally (to itself), or remotely to a server or other NAC on the network. Provide the ability to configure the following archiving properties, at a minimum:
1. Archive on time of day
 2. Archive on user-defined number of data stores in the log (buffer size)
 3. Archive when log has reached it's user-defined capacity of data stores
 4. Provide ability to clear logs once archived.

2.06 AUDIT LOG

- A. Provide and maintain an Audit Log that tracks all activities performed on the NAC. Provide the ability to specify a buffer size for the log and the ability to archive log based on time or when the log has reached its user-defined buffer size. Provide the ability to archive the log locally (to the NAC), to another NAC on the network, or to a server. For each log entry, provide the following data:
1. Time and date
 2. User ID
 3. Change or activity: i.e., Change setpoint, add or delete objects, commands, etc.

2.07 DATABASE BACKUP AND STORAGE

- A. The NAC shall have the ability to automatically backup its database. The database shall be backed up based on a user-defined time interval.
- B. Copies of the current database and, at the most recently saved database shall be stored in the NAC. The age of the most recently saved database is dependent on the user-defined database save interval.
- C. The NAC database shall be stored, at a minimum, in XML format to allow for user viewing and editing, if desired. Other formats are acceptable as well, as long as XML format is supported.

2.08 INTEROPERABLE DIGITAL CONTROLLER (IDC)

- A. Controls shall be microprocessor based Interoperable LonWorks Controllers (IDC).
- B. HVAC control shall be accomplished using LonMark™ based devices where the application has a LonMark profile defined.

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- C. The contractor shall run the LonWorks network trunk to the nearest Network Area Controller (NAC). Coordinate locations of the NAC to ensure that maximum network wiring distances, as specified by the LonWorks wiring guidelines, are not exceeded. A maximum of 126 devices may occupy any one LonWorks trunk and must be installed using the appropriate trunk termination device. All LonWorks and LonMark devices must be supplied using FTT-10A LonWorks communications transceivers.
- D. The Network Area Controller (NAC) will provide all scheduling, alarming, trending, and network management for the LonMark / LonWorks based devices.
- E. The IDCs shall communicate with the NAC at a baud rate of not less than 78.8K baud. The IDC shall provide LED indication of communication and controller performance to the technician, without cover removal.
- F. The contractor supplying the IDC's shall provide documentation for each device, with the following information at a minimum:
 - 1. Network Variable Inputs (nvi's); name and type
 - 2. Network Variable Outputs (nvo's); name and type
 - 3. Network configuration parameters (nci, nco); name and type
- G. It is the responsibility of the contractor to ensure that the proper Network Variable Inputs and Outputs (nvi and nvo) are provided in each IDC, as required by the point charts.
- H. The supplier of any programmable IDC shall provide one copy of the manufacturer's programming tool, with documentation, to the City of New York.

2.09 WEB BROWSER CLIENTS

- A. The system shall be capable of supporting an unlimited number of clients using a standard Web browser such as Internet Explorer™. Systems requiring additional software (to enable a standard Web browser) to be resident on the client machine, or manufacture-specific browsers shall not be acceptable.
- B. The Web browser software shall run on any operating system and system configuration that is supported by the Web browser. Systems that require specific machine requirements in terms of processor speed, memory, etc., in order to allow the Web browser to function with the BMS, shall not be acceptable.
- C. The Web browser shall provide the same view of the system, in terms of graphics, schedules, calendars, logs, etc., and provide the same interface methodology as is provided by the Graphical user Interface. Systems that require different views or that require different means of interacting with objects such as schedules, or logs, shall not be permitted.

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- D. The Web browser client shall support at a minimum, the following functions:
1. User log-on identification and password shall be required. If an unauthorized user attempts access, a blank web page shall be displayed. Security using Java authentication and encryption techniques to prevent unauthorized access shall be implemented.
 2. Graphical screens developed for the GUI shall be the same screens used for the Web browser client. Any animated graphical objects supported by the GUI shall be supported by the Web browser interface.
 3. HTML programming shall not be required to display system graphics or data on a Web page. HTML editing of the Web page shall be allowed if the user desires a specific look or format.
 4. Storage of the graphical screens shall be in the Network Area Controller (NAC), without requiring any graphics to be stored on the client machine. Systems that require graphics storage on each client are not acceptable.
 5. Real-time values displayed on a Web page shall update automatically without requiring a manual "refresh" of the Web page.
 6. Users shall have administrator-defined access privileges. Depending on the access privileges assigned, the user shall be able to perform the following:
 - a. Modify common application objects, such as schedules, calendars, and set points in a graphical manner.
 1. Schedule times will be adjusted using a graphical slider, without requiring any keyboard entry from the operator.
 2. Holidays shall be set by using a graphical calendar, without requiring any keyboard entry from the operator.
 - b. Commands to start and stop binary objects shall be done by right-clicking the selected object and selecting the appropriate command from the pop-up menu. No entry of text shall be required.
 - c. View logs and charts
 - d. View and acknowledge alarms
 - e. Setup and execute SQL queries on log and archive information
 7. The system shall provide the capability to specify a user's (as determined by the log-on City

of New York identification) home page. Provide the ability to limit a specific user to just their defined home page. From the home page, links to other views, or pages in the system shall be possible, if allowed by the system administrator.

8. Graphic screens on the Web Browser client shall support hypertext links to other locations on the Internet or on Intranet sites, by specifying the Uniform Resource Locator (URL) for the desired link.

2.10 SYSTEM PROGRAMMING

- A. The Graphical User Interface software (GUI) shall provide the ability to perform system programming and graphic display engineering as part of a complete software package. Access to the programming functions and features of the GUI shall be through password access as assigned by the system administrator.
- B. A library of control, application, and graphic objects shall be provided to enable the creation of all applications and user interface screens. Applications are to be created by selecting the desired control objects from the library, dragging or pasting them on the screen, and linking them together using a built in graphical connection tool. Completed applications may be stored in the library for future use. Graphical User Interface screens shall be created in the same fashion. Data for the user displays is obtained by graphically linking the user display objects to the application objects to provide "real-time" data updates. Any real-time data value or object property may be connected to display its current value on a user display. Systems requiring separate software tools or processes to create applications and user interface displays shall not be acceptable.
- C. Programming Methods
 1. Provide the capability to copy objects from the supplied libraries, or from a user-defined library to the user's application. Objects shall be linked by a graphical linking scheme by dragging a link from one object to another. Object links will support one-to-one, many-to-one, or one-to-many relationships. Linked objects shall maintain their connections to other objects regardless of where they are positioned on the page and shall show link identification for links to objects on other pages for easy identification. Links will vary in color depending on the type of link; i.e., internal, external, hardware, etc.
 2. Configuration of each object will be done through the object's property sheet using fill-in the blank fields, list boxes, and selection buttons. Use of custom programming, scripting language, or

a manufacturer-specific procedural language for configuration will not be accepted.

3. The software shall provide the ability to view the logic in a monitor mode. When on-line, the monitor mode shall provide the ability to view the logic in real time for easy diagnosis of the logic execution. When off-line (debug), the monitor mode shall allow the user to set values to inputs and monitor the logic for diagnosing execution before it is applied to the system.
4. All programming shall be done in real-time. Systems requiring the uploading, editing, and downloading of database objects shall not be allowed.
5. The system shall support object duplication within a customer's database. An application, once configured, can be copied and pasted for easy re-use and duplication. All links, other than to the hardware, shall be maintained during duplication.

2.11 OBJECT LIBRARIES

- A. A standard library of objects shall be included for development and setup of application logic, user interface displays, system services, and communication networks.
- B. The objects in this library shall be capable of being copied and pasted into the user's database and shall be organized according to their function. In addition, the user shall have the capability to group objects created in their application and store the new instances of these objects in a user-defined library.
- C. In addition to the standard libraries specified here, the supplier of the system shall maintain an on-line accessible (over the Internet) library, available to all registered users to provide new or updated objects and applications as they are developed.
- D. All control objects shall conform to the control objects specified in the BACnet specification.

2.12 OTHER CONTROL SYSTEM HARDWARE

- A. Space Temperature Wall Module.
 1. Wall module shall have a 20K Ohm NTC thermistor temperature sensor with operating range of 45 to 99 F under a locking cover/enclosure with UL 916 listing designed for mounting on a standard electrical switch box.
 2. Space temperature sensors shall be accurate to plus or minus one F degree.

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- B. Control Valves: Control valves shall be 2-way or 3-way pattern as shown constructed for tight shutoff and shall operate satisfactory against system pressures and differentials.
1. Two-position valves shall be 'line' size. Proportional control valves shall be sized for a maximum pressure drop of 5.0 psi at rated flow (except as may be noted on the drawings).
 2. Two-way water valves shall have equal percentage flow characteristics and three-way valves shall have equal percentage flow characteristics straight through and linear through the bypass.
 3. Provide valve position indicator on all valves. Leakage rate shall be no more than 0.05% of Cv.
 4. Valves 1/2 inch through 1 1/2 inch shall be screwed pattern except where solder connections are specified for valves 1/2 or 3/4 inches.
 5. Three-way valves bypass port shall be of one size reduced Cv to preclude the need for a bypass port balancing valve.
 6. Valve and cartridge replacement tool shall be configured for maintenance or replacement without draining the coil to prevent water spill; however, an integral isolation valve on the control valve outlet will also be acceptable.
 7. Two inch valves shall be "screwed" configuration and 2-1/2 inch and larger valves shall be "flanged" configuration and ANSI-rated to withstand the pressures and temperatures encountered.
- C. Duct Mount, Pipe Mount and Outside Air Temperature Sensors: Temperature sensors with an accuracy of $\pm 0.3^\circ$ F.
1. Outside air sensors shall include an integral sun shield.
 2. Duct sensors shall have sensor approximately in center of the duct, and shall have selectable lengths of 6, 12, and 18 inches.
 3. Multipoint averaging element sensors shall be provided where specified and shall have a minimum of one foot of sensor length for each square foot of duct area (provide multiple sensors if necessary).
 4. Pipe mount sensors shall have copper, or stainless steel separable wells.
- D. Current Sensitive Switches: Solid state, split core current switch that operates when the current level (sensed by the internal current transformer) exceeds the adjustable trip point shall be provided where specified. Current switches shall include an integral

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- LED for indication of trip condition and a current level below trip set point.
- E. Low Temperature Limit Switches. Safety low limit shall be manual reset twenty foot limited fill type responsive to the coolest section of its length.
 - F. High Temperature Limit Switches. Safety high limit (firestats) shall be manual reset type.
 - G. Humidity Sensors.
 - 1. Duct and room sensors shall have a sensing range of 5% to 95%.
 - 2. Duct sensors shall be provided with a sampling chamber.
 - 3. Outdoor air humidity sensors shall have a sensing range of 20% to 95% RH. They shall have a compensated ambient temperature range of -40°F to 170° F.
 - H. Enthalpy Sensors. Duct mounted enthalpy sensor shall include a temperature sensor and a humidity sensor constructed to close an electrical contact upon a drop in enthalpy (total heat) to enable economizer modes of operation where specified.
 - I. Actuators, General.
 - 1. All automatically controlled devices, unless specified otherwise elsewhere, shall be provided with actuators sized to operate their appropriate loads with sufficient reserve power to provide smooth modulating action or two-position action and tight close-off. Valves shall be provided with actuators suitable for floating or analog signal control as required to match the controller output. Actuators shall be power failure return type where valves or dampers are required to fail to a safe position and where specified.
 - J. Temperature Control Panels: Furnish temperature control panels of code gauge steel with locking doors for mounting all devices. All electrical devices within a control panel shall be factory wired. All external wiring shall be connected to terminal strips mounted within the panel. Provide engraved phenolic nameplates identifying all devices mounted on the face of control panels. A complete set of 'as-built' control drawings (relating to the controls within that panel) shall be furnished within each control panel.

2.13 ELECTRICAL CONTROL POWER AND LOW VOLTAGE WIRING

- A. Provide interlock wiring between supply and return fans and electrical wiring for relays for temperature and pressure indication. Do not provide interlock wiring if a dedicated digital output has been specified for the equipment or the sequence of operation requires independent start/stop.
- B. Provide control wiring, conduit and connections for low temperature thermostats, high temperature thermostats, alarms, flow switches, actuating devices, control devices for temperature, pressure and flow indication, and point resets for the LonWorks BMS/DDC control system.
- C. Provide all other wiring required for the complete operation of the LonWorks BMS/DDC control system. This includes but is not limited to:
 - 1. Where 24VAC power is not provided as an integral part of the equipment, provide control power wiring between 120 volt AC/24 volt AC power transformers to LonWorks control components requiring 24 volts power for operation.
 - 2. 78 Kilo Baud Twisted pair Local Operating Network wiring (TP/FTT-10).
- D. Install all wiring raceway systems complying with the requirements of the National Electrical Code, and New York City Code. All corridor installations shall be installed in the Cable Tray or EMT. Provide EMT sleeves from the cable tray through the walls to above ceiling areas. Secured free air plenum rated cable is allowed to be run above the ceiling areas.
- E. LonWorks Network Communication Requirements
 - 1. Wired network communication shall be via channels consisting of a 24 AWG twisted pair installed in a 3/4" EMT or cable tray.
 - 2. Communication conduits shall not be installed closer than six feet from high power transformers or run parallel within six feet of electrical high power cables. Care shall be taken to route the cable as far from interference generating devices as possible.
 - 3. All shields shall be ground (earth ground) at one point only, to eliminate ground loops. This grounding shall be within the enclosure.
 - 4. There shall be no power wiring, in excess of 30 VAC rms, run in conduit with communications

wiring. In cases where signal wiring is run in conduit with communication wiring, all communication wiring and signal wiring shall be run using separate twisted shielded pairs with the shields grounded in accordance with the manufacturer's wiring practices.

F. Input/Output Signal Control Wiring

1. RTD wiring shall be three-wire or four-wire twisted, shielded, minimum number 22 gauge.
2. Digital Input and Output wiring shall be a minimum of number 18 gauge.
3. Analog Input and Output control functions shall be a minimum of number 18 gauge, twisted, shielded.
4. Thermistors shall be equipped with the manufacturers' calibrated lead wiring. This lead wire shall not be trimmed.

G. Low Voltage (24VAC) Power Wiring

1. Low voltage (24VAC) power wiring shall be minimum two-wire twisted AWG 16-2. Provide low voltage 24V AC power to each LON controller, as required, from 110V/24VAC transformers to provide 24VAC low voltage control power. Provide the required number of transformers based on the power requirements of each LonWorks controller.
2. Low voltage power wiring that exceeds 30 VAC shall be run separate from the LON communications twisted pair (TP/FT-10) LON wiring.

H. Low Voltage (24 VAC/VDC) Power and Signal Wiring

1. Low voltage power wiring (24 VAC) shall be minimum two-conductor stranded AWG 18 and sized for the amperage required. Low voltage signal wiring (0-10 VDC) shall be minimum two-conductor stranded AWG 18 and sized for the amperage required. Low voltage wiring may be combined within one cable if acceptable to the practices of the manufacturer to which the cable is connected.

I. Control Transformers (120Volt/24VAC)

The Contractor shall provide control transformers conforming to the following specifications:

1. Single-phase general purpose.
2. Dry type, two winding type, self-cooled.

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3. Ratings and quantities complying with the control system requirements and in conformance to:
 - a. New York City Code Requirements
4. Manufactured and tested in accordance with the latest applicable ANSI, NEMA, and IEEE Standards. UL listed and bear the UL label.
5. Control transformers shall be designed for continuous operation at rated kVA with normal life expectancy per ANSI C57.96.
6. Each transformer shall be over-current protected through the use of either a fuse or circuit breaker.

J. Conduit and Fittings

1. Where conduit is utilized for Control Wiring, Control Cable or Transmission Cable: Electrical metallic tubing (EMT) shall be provided with compression fittings. Conduit shall be cold rolled steel, zinc coated or zinc-coated rigid steel with threaded connections.
2. Outlet Boxes: Hot-dipped galvanized drawn steel suited to each application, in general, four inches square or octagon with suitable raised cover.
3. Pull and Junction Boxes: Size according to number, size, and position of entering raceway as required by National Electrical Codes. Enclosure type shall be suited to location.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. All work described in this section shall be performed by system integrators or contractors that have a successful history in the design and installation of integrated control systems. The installing office shall have a minimum of three years of integration experience and shall provide documentation in the submittal package verifying the company's experience.
- B. Install system and materials in accordance with manufacturer's instructions, and as detailed on the project drawing set.
- C. Drawings of the TCS and BMS network are diagrammatic only and any apparatus not shown, but required to make

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the system operative to the complete satisfaction of the Commissioner shall be furnished and installed without additional cost.

- D. Line and low voltage electrical connections to control equipment shown specified or shown on the control diagrams shall be furnished and installed by the Contractor in accordance with these specifications.
- E. Equipment shall be furnished completely wired. Control wiring will be furnished and installed by the Contractor.

3.02 WIRING

- A. All low voltage electrical control wiring to the control panels, NAC, computers and network components shall be the responsibility of the Contractor.
- B. The Contractor shall furnish all power wiring to control panels, electrical starters and motors.

3.03 WARRANTY

- A. Equipment, materials and workmanship incorporated into the work shall be warranted for a period of one (1) year from the time of system acceptance.
- B. Within this period, upon notice by the City of New York, any defects in the work provided under this section due to faulty materials, methods of installation or workmanship shall be promptly (within 48 hours after receipt of notice) repaired or replaced by the Contractor at no expense to the City of New York.

3.04 WARRANTY ACCESS

- A. The City of New York shall grant to the Contractor, reasonable access to the TCS and BMS during the warranty period.
- B. The City of New York shall allow the contractor to access the TCS and BMS from a remote location for the purpose of diagnostics and troubleshooting, via the Internet, during the warranty period.

3.05 SOFTWARE LICENSE

- A. The City of New York shall be the named license holder of all software associated with any and all incremental work on the project(s).
- B. The City of New York, or the appointed agent, shall receive usership of all job specific software configuration documentation, data files, and application-level software developed for the project. This shall include all custom, job specific software

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code and documentation for all configuration and programming that is generated for a given project and /or configured for use within Niagara Framework (Niagara) based controllers. Any and all required Ids and passwords for access to any component or software program shall be provided to the City of New York.

3.06 ACCEPTANCE TESTING

- A. Upon completion of the installation, the Contractor shall load all system software and start-up the system. This contractor shall perform all necessary calibration, testing and de-bugging and perform all required operational checks to insure that the system is functioning in full accordance with these specifications.
- B. This contractor shall perform tests to verify proper performance of components, routines, and points. Repeat tests until proper performance results. This testing shall include a point-by-point log to validate 100% of the input and output points of the DDC system operation.
- C. Upon completion of the performance tests described above, repeat these tests, point by point as described in the validation log above in presence of Commissioner, as required. Properly schedule these tests so testing is complete at a time directed by the Commissioner.
- D. System Acceptance: Satisfactory completion is when the contractor have performed successfully all the required testing to show performance compliance with the requirements of the Contract Documents to the satisfaction of the Commissioner. System acceptance shall be contingent upon completion and review of all corrected deficiencies.

3.07 OPERATOR INSTRUCTION, DEMONSTRATION

- A. During system commissioning and at such time acceptable performance of the TCS and BMS hardware and software has been established the Contractor shall provide on-site operator instruction to the City of New York operating personnel. Operator instruction shall be done during normal working hours and shall be performed by a competent representative familiar with the system hardware, software and accessories.
- B. The Contractor shall provide 40 hours of instruction to the City of New York designated personnel on the operation of the TCS and BMS and describe its intended use with respect to the programmed functions specified. Operator orientation of the systems shall include, but not be limited to; the overall operation program, equipment functions (both individually and as part of the total integrated system), commands, systems generation, advisories, and appropriate operator intervention required in responding to the System's operation.
- C. The training shall be in three sessions as follows:
1. Initial Training: One day session (8 hours) after system is started up and at least one week before first acceptance test. Manual shall have been submitted at least two weeks prior to training so that the City of New York personnel can start to familiarize themselves with the system before classroom instruction begins.
 2. First Follow-Up Training: Two days (16 hours total) approximately two weeks after initial training, and before Formal Acceptance. These sessions will deal with more advanced topics and answer questions.
 3. Warranty Follow Up: Two days (16 hours total) in no less than 4 hour increments, to be scheduled at the request of the City of New York during the one year warranty period. These sessions shall cover topics as requested by the City of New York such as; how to add additional points, create and gather data for trends, graphic screen generation or modification of control routines.

PART 4 - POINTS LIST

4.01 CONSTANT VOLUME AIR HANDLING UNIT (AHU)

- A. Supply Fan
1. Start/Stop and Status (DO/DI)
- B. Return Fan

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1. Start/Stop and Status (DO/DI)
- C. Damper Control
 1. Outdoor Air Damper (AO)
 2. Return Air Damper (AO)
 3. Spill Air Damper (AO)
 4. Outdoor Air Temperature (AI)
 5. Mixed Air Temperature (AI)
- D. Heating Coil
 1. Control Valve (AO)
 2. Pump Start/Stop and Status (DO/DI)
 3. Freezestat (DI)
- E. Cooling Coil
 1. DX Coil Stages (BO each stage)
- F. Discharge Air Temperature (AO)
- G. Return Air Temperature (AI)
- H. Air Filter Pressure Drop (AI)
- I. Smoke Detector (DI each detector)

4.02 BOILER AND HOT WATER SYSTEM

- A. Boiler
 1. Control Panel Enable (DO)
 2. Run Status (DI)
 3. Boiler Alarm (DI)
 4. Leaving Water Temperature (AI)
 5. Return Water Temperature (AI)
 6. Outdoor Air Temperature (AI)
- B. Hot Water System
 1. Space Temperature
 2. Pump Start/Stop and Status (DO/DI each pump)

END OF SECTION

SECTION 230993
SEQUENCE OF OPERATION

PART 1 - GENERAL

1.01. DESCRIPTION OF WORK

- A. The sequence of operation is hereby defined as the written manner and method by which HVAC systems and other building systems and equipment operate. This description includes automatic and manual control functions and includes operation(s), which are monitored, observed, trended, etc. and otherwise used to make decisions regarding system operation.
- B. Operating equipment, devices, and system components required for control systems are also specified in other Division 23 Sections. Specific requirements for each type of control system operation are specified in Section 230501, Basic HVAC Requirements, and this section and are included by specific reference.
- C. Input/Output (I/O) points which are required are herein defined as those hardware and software points needed to achieve the described sequence of operation, measurement, monitoring, calculating and alarming. These are as shown on the Point Lists, and as described and/or shown on the contract drawings, and as described in all specification sections. The points requirement is cumulative in its effect so as to be more complete and inclusive than any one cited source. The points shall be monitored, displayed, adjusted, trended, and/or alarmed at the POT and/or SOC.
- D. Adjustability of Settings: Declarations within the specifications of setpoints, differentials, times, alarm settings, and all other such settings are hereby understood to be field adjustable. Setting provided are intended as an initial operating condition for system startup and configuration unless otherwise noted. Final settings determined during testing and balancing, and during system startup and calibration shall be included in final system back-up, sequence of operations and included in the Operation and Maintenance manual and close-out documentation.

1.02 RELATED SECTIONS

- A. Division 23 Sections
- B. Division 26 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Sequence of Operation: Submit Shop Drawings for each of the systems being controlled shall include a written

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sequence of operation as it appears in these specifications. Any deviation from the written sequences shall be highlighted by the Contractor so that the Commissioner and the Facilities Management Systems Integrator (FMSI) can review, comment and respond to each change. Omission of a sequence or modification of a sequence does not relieve the Contractor from providing the specified sequence.

PART 2 - PRODUCTS

Not applicable to this section.

PART 3 - EXECUTION

3.01 AIR HANDLING/CONDENSING UNITS CONTROL SEQUENCES, AHU-1 & ACCU-1

A. Safety Controls for Air Handling Units:

1. Provide low-limit controller to prevent mixed air from falling below 45°F.
2. A hard-wired interlocked supply high discharge switch shall stop the supply and return fans when duct pressure exceeds design value. The fans shall remain off until the pressure switches are reset. An alarm condition will be sent to the BMS.
3. All duct mounted automatic control instruments shall be mounted on the exterior surface of the insulation, on suitable metal saddles. Provide appropriate extension mountings for control devices to clear insulation.

B. Fire Alarm Shut-Down: This sequence of operation shall be in force at all times and under all modes of operation.

1. The Contractor shall furnish and the mechanical contractor shall install the smoke detector(s) to shut down the system upon sensing smoke.
2. During a fire alarm condition, the Fire Alarm Control Panel (FACP) shall shut down the supply and return fans and the system shall operate and remain in the System-OFF Mode until the alarm condition is cleared.
3. Fire alarm system activation initiated by manual pull station shall not shut down the unit supply and exhaust fans.

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C. Operating Modes. There is only one operation mode at all times: cooling mode, regardless of the actual outdoor season or occupancy mode. All the control and safety devices and the Fire Alarm System shall be engaged permanently.

a. The system shall be independently ON even during a Lon Network communication failure.

D. Sequence of Operation:

1. System-OFF:

a. This state shall be engaged only manually for maintenance purpose, and for short periods, when there is no activity in the building. In this mode the fans shall be OFF, and all cooling shall be de-energized.

2. Cooling Mode:

a. Occupied or un-occupied Cycle:

1) The supply fan are cycleing ON and OFF interlocked with compressor operation.

2) Mechanical DX cooling coil, and associated condensing unit, shall be controlled by cycleing ON/OFF so as to maintain the space temperature at set-point, usually 78°F (adjustable).

**3.02 ROOFTOP CONSTANT-VOLUME HVAC UNIT WITH ECONOMIZER DAMPERS,
DX-COOLING, GAS-FIRED HEATING AND DDC CONTROLS (HVAC-3)**

A. Safety Controls:

1. Provide low-limit control to prevent mixed air from falling below 45°F.

2. The unit and its components are subject to other OEM safety devices. Refer to unit specification sections.

3. Safety Emergency Heating Mode: A furnace control Hand-Off-Auto toggle selector switch shall be utilized as follows. In the "Auto" position, the furnace shall be controlled in the automatic modes as defined herein. In the "Off" position, the furnace shall be disabled. In the "Hand" position, the units' DDC furnace operating controls shall be overridden and the furnace started and ramped up to the full heat output capacity. In all modes, the furnace operation

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shall be subject to all safety devices including but not limited to the manufacturer's high temperature cut-out safety and a unit airflow proving switch.

- B. Fire Alarm Shut Down: This sequence of operation shall be in force at all times and under all modes of operation.
1. The Contractor shall furnish and install the smoke detector(s) to shut down the system upon sensing smoke (if not already provided).
 2. During a fire alarm condition, the Fire Alarm Control Panel (FACP) shall shut down the supply and electrically interlocked exhaust fan and the system shall operate and remain in the System-OFF Mode until the alarm condition is cleared. Simultaneously an alarm condition signal will be sent to the fire alarm system, which will generate an alarm signal. When the unit fans are shut down by a fire alarm condition, all fire/smoke and smoke dampers shall close as commanded by the FACP. After the fire alarm shutdown is cleared, all smoke and fire/smoke dampers shall be commanded open by the FACP and the unit shall resume its normal operation according to the appropriate mode.
 3. Fire alarm system activation initiated by manual pull station shall not shut down the unit supply and return fans and shall not close the associated smoke and/or fire/smoke dampers if in the testing mode.
- C. Operating Modes. The operating modes of the HVAC unit shall be automatically determined by the combined actions of the DDC Scheduler, control and safety devices and the Fire Alarm System.
1. Mode Selection and Fan Operation:
 - a. The operator shall be able to manually select the operating mode through an H-O-A switch mounted in the HVAC UNIT and wired into the digital controller. In the automatic-position the HVAC UNIT is indexed automatically by the DDC Scheduler between the various modes of operation described herein. In the H-position the HVAC UNIT shall remain in the Occupied Mode. In the O-position the HVAC UNIT shall remain in the Unoccupied Mode.
 - b. Summer/Winter Mode Selection and Economizer Mode Selection: The rooftop unit shall be automatically indexed to operate in either the

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Summer Mode or Winter Mode based on the outside ambient temperature.

1. Winter Mode: If the outside temperature is less than or equal to 55 F, the unit shall be de-energised.
2. If the outside temperature is greater than 55°F but less than 60°F, the unit shall be in whatever Mode was the last Mode of operation (off or cooling).
3. Summer Mode: If the outside temperature is greater than or equal to 60°F but less than 65°F, the unit shall be indexed to the Summer Cooling Mode.
4. Economizer Mode: When the calculated global outside air enthalpy is less than the controller's calculated return air enthalpy, the rooftop unit shall be indexed to the Economizer Mode. When the outside air enthalpy is greater than the return enthalpy, the rooftop unit shall be indexed to Summer Mechanical Cooling Mode. If the outside temperature is greater than or equal to 65F, the unit shall be indexed to the Mechanical Cooling Mode. Upon a Lon Network communication failure, the rooftop unit shall default to the seasonal Occupied Mode.

D. Sequence of Operation:

1. System-OFF:

- a. When the HVAC UNIT is OFF, the outside air and exhaust dampers shall be closed, the fans shall be OFF, and all heating and cooling mode operations shall be de-energized.

2. Summer (Cooling) Mode:

1) Occupied Cycle:

- 1) The supply fan is commanded ON and run continuously subject to all safeties. The exhaust fan is OFF.
- 2) The outdoor air damper is opened to its minimum ventilation position, and the exhaust damper is closed.
- 3) Mechanical DX cooling coil, and associated compressors, shall be controlled in stages

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and sequenced so as to maintain the space temperature at set-point, usually 78°F (adjustable).

- 4) Demand controlled ventilation: For unit installation with CO2 sensor and demand control ventilation module outside air damper position shall be modulated by CO2 sensor output signal.
- 5) When the space pressurization sensor reaches space limits, usually 0.05" w.g. (adjustable), the exhaust fan shall turn ON, and the exhaust damper shall open to its minimum position. The exhaust fan shall turn OFF, and the exhaust damper shall close when space pressurization sensor drop below setup point.

b. Unoccupied Cycle:

- 1) Outdoor and exhaust air dampers at HVAC UNIT are fully closed.
- 2) Supply air fan is OFF, exhaust fan is OFF and the associated compressors and condenser fan are de-energized.
- 3) The supply air fan, as well as the associated compressors shall be energized when the high limit of the space air temperature is reached, usually 85 °F (adjustable), and the system shall sequence so as to maintain the space at the high limit set-point for the unoccupied cycle.
- 4) The system shall turn OFF when the space temperature is two degrees below the space high limit for unoccupied cycle, usually 85 °F (adjustable).

3. Winter (Heating) Mode:

a. Occupied Cycle:

- 1) In heating mode the rooftop units provide basic heating and ventilation to the building.
- 2) The supply fan is commanded ON and run continuously subject to all safeties.
- 3) The outdoor damper is opened to its minimum ventilation position.

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4) The gas-fired HVAC UNIT's furnace is modulated to maintain the supply air temperature at setup point, based on a schedule function of the outdoor temperature. When activated, a signal shall be send through BMS system to activate the induced fan motor of the gas burner. Gas burner shall be energized and the burner ignition sequence begins. The heater is subject to a discharge high-temperature limit controller set to 90°F (adjustable). If the supply air temperature exceeds the HTL setpoint, it will take control of the heater reducing the heating capacity of the heat to maintain its maximum allowable setpoint.

5) Demand controlled ventilation: For unit installation with CO2 sensor and demand control ventilation module outside air damper position shall be modulated by CO2 sensor output signal.

6) When the space pressurization sensor reaches space pressurization limits, usually 0.05" w.g. (adjustable), the exhaust fan shall turn ON, and the exhaust damper shall open to its minimum position. The exhaust fan shall turn OFF, and the exhaust damper shall close when space pressurization sensor drops below setup point.

b. Unoccupied Cycle:

1) The units operates in concert with building peripheral heating provided by the existing finned tube radiation. The unit remains in the System-OFF condition until such time that the space temperature drops 4 degrees F below the night time setback temperature setpoint in heating mode.

2) The outside air intake and exhaust dampers shall be fully closed at all times during the Unoccupied Mode, and the exhaust fan shall be OFF.

3) The HVAC UNIT supply fan is cycled ON to maintain the setback space temperature of 50°F. On a drop in space temperature below the setback setpoint with 4 degrees F, the HVAC UNIT fans are energized and the burner is energized.

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- 4) The heater is subject to a discharge high-temperature limit (HTL) controller set to 95°F (adjustable). If the supply air temperature exceeds the HTL setpoint it will take control of the heater reducing the heating capacity of the heat to maintain its maximum allowable setpoint.
- 5) On a rise in space temperature above the night setback temperature by a differential of 2°F (adjustable) the fan shall be commanded OFF, and the furnace shall be de-energized.

4. Economizer Mode:

- a. The enthalpy controller determines the activation of the economizer mode. The enthalpy sensors compare total heat content of the indoor air and outdoor air to determine the most efficient air source. The Outdoor Air Damper will modulate between the adjustable minimum position and full open to maintain space temperature at the Economizer set point.
- b. The Outdoor Air Damper, Exhaust Air Damper and Recirculation Damper operate simultaneously and interlocked, from fully closed to fully open as follows:
 - 1) When Outdoor Air Damper is fully open, the Exhaust Air Damper is fully open and the Recirculation Damper is fully closed.
 - 2) When Outdoor Air Damper is fully closed, the Exhaust Air Damper is fully closed and the Recirculation Damper is fully open.
 - 3) For any other intermediate position of the Outdoor Air Damper, the Exhaust Air Damper and Recirculation Damper will modulate inversely proportional to each other's position following any modulation of the Outdoor Air Damper above to minimum outdoor air position.
- c. The Outdoor Air Damper will be set to its adjustable minimum position if the Economizer function is disabled or if the Discharge Temperature Sensor has failed.
- d. Economizer mode shall be correlated with the occupied mode only, and shall be disabled in unoccupied mode.

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3.03 ROOFTOP VARIABLE AIR VOLUME HVAC UNIT WITH ECONOMIZER
DAMPERS, DX-COOLING, GAS-FIRED HEATING AND DDC CONTROLS
(HVAC-2, HVAC-4, HVAC-5)

A. Safety Controls:

1. Provide low-limit control to prevent mixed air from falling below 45°F.
2. The unit and its components are subject to other OEM safety devices. Refer to unit specification sections.
3. Safety Emergency Heating Mode: A furnace control Hand-Off-Auto toggle selector switch shall be utilized as follows. In the "Auto" position, the furnace shall be controlled in the automatic modes as defined herein. In the "Off" position, the furnace shall be disabled. In the "Hand" position, the units' DDC furnace operating controls shall be overridden and the furnace started and ramped up to the full heat output capacity. In all modes, the furnace operation shall be subject to all safety devices including but not limited to the manufacturer's high temperature cut-out safety and a unit airflow proving switch.

B. Fire Alarm Shut Down: This sequence of operation shall be in force at all times and under all modes of operation.

1. The Fire Alarm contractor shall furnish and the mechanical contractor shall install the smoke detector(s) to shut down the system upon sensing smoke (if not already provided).
2. During a fire alarm condition, the Fire Alarm Control Panel (FACP) shall shut down the supply and electrically interlocked exhaust fan and the system shall operate and remain in the System-OFF Mode until the alarm condition is cleared. Simultaneously an alarm condition signal will be sent to the fire alarm system, which will generate an alarm signal. When the unit fans are shut down by a fire alarm condition, all fire/smoke and smoke dampers shall close as commanded by the FACP. After the fire alarm shutdown is cleared, all smoke and fire/smoke dampers shall be commanded open by the FACP and the unit shall resume its normal operation according to the appropriate mode.
3. Fire alarm system activation initiated by manual pull station shall not shut down the unit supply and return fans and shall not close the associated

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smoke and/or fire/smoke dampers if in the testing mode.

- C. Operating Modes. The operating modes of the HVAC unit shall be automatically determined by the combined actions of the DDC Scheduler, control and safety devices and the Fire Alarm System.

1. Mode Selection and Fan Operation:

- a. The operator shall be able to manually select the operating mode through an H-O-A switch mounted in the HVAC UNIT and wired into the digital controller. In the automatic-position the HVAC UNIT is indexed automatically by the DDC Scheduler between the various modes of operation described herein. In the H-position the HVAC UNIT shall remain in the Occupied Mode. In the O-position the HVAC UNIT shall remain in the Unoccupied Mode.
- b. Summer/Winter Mode Selection and Economizer Mode Selection: The rooftop unit shall be automatically indexed to operate in either the Summer Mode or Winter Mode based on the outside ambient temperature.
 - 1) Winter Mode: If the outside temperature is less than or equal to 55 F, the unit shall be de-energised.
 - 2) If the outside temperature is greater than 55°F but less than 60°F, the unit shall be in whatever Mode was the last Mode of operation (off or cooling).
 - 3) Summer Mode: If the outside temperature is greater than or equal to 60°F but less than 65°F, the unit shall be indexed to the Summer Cooling Mode.
 - 4) Economizer Mode: When the calculated global outside air enthalpy is less than the controller's calculated return air enthalpy, the rooftop unit shall be indexed to the Economizer Mode. When the outside air enthalpy is greater than the return enthalpy, the rooftop unit shall be indexed to Summer Mechanical Cooling Mode. If the outside temperature is greater than or equal to 65F, the unit shall be indexed to the Mechanical Cooling Mode. Upon a Lon Network communication failure, the rooftop unit shall default to the seasonal Occupied Mode.

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D. Sequence of Operation:

1. System-OFF:

- a. When the HVAC UNIT is OFF, the outside air and exhaust dampers shall be closed, the fans shall be OFF, and all heating and cooling mode operations shall be de-energized.

2. Summer (Cooling) Mode:

a. Occupied Cycle:

- 1) The supply fan is commanded ON and run continuously subject to all safeties. The exhaust fan is OFF.
- 2) The outdoor air damper is opened to its minimum ventilation position, and the exhaust damper is closed.
- 3) Mechanical DX cooling coil, and associated compressors, shall be controlled in stages and sequenced so as to maintain the supply air temperature at set-point, usually 55°F (adjustable).
- 4) The Variable Frequency Drive associated with the supply fan shall modulate fan speed to maintain the supply duct static pressure before VAV box, measured by duct pressure sensor, at minimum required as indicated by VAV box manufacturer.
- 5) Demand controlled ventilation: For unit installation with CO2 sensor and demand control ventilation module outside air damper position shall be modulated by CO2 sensor output signal.
- 6) When the space pressurization sensor reaches space limits, usually 0.05"w.g. (adjustable), the exhaust fan shall turn ON, and the exhaust damper shall open to its minimum position. The exhaust fan shall turn OFF, and the exhaust damper shall close when space pressurization sensor drop below setup point.

b. Unoccupied Cycle:

- 1) Outdoor and exhaust air dampers at HVAC UNIT are fully closed.

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- 2) Supply air fan is OFF, exhaust fan is OFF and the associated compressors and condenser fan are de-energized.
 - 3) The supply air fan, as well as the associated compressors shall be energized when the high limit of the space air temperature is reached, usually 85 °F (adjustable), and the system shall sequence so as to maintain the space at the high limit set-point for the unoccupied cycle.
 - 4) The system shall turn OFF when the space temperature is two degrees below the space high limit for unoccupied cycle, usually 85 °F (adjustable).
3. Winter (Heating) Mode:
- a. Occupied Cycle:
 - 1) In heating mode the rooftop units provide basic heating and ventilation to the building.
 - 2) The supply fan is commanded ON and run continuously subject to all safeties.
 - 3) The outdoor damper is opened to its minimum ventilation position.
 - 4) The gas-fired HVAC UNIT's furnace is modulated to maintain the supply air temperature at setup point, basen on a schedule function of the outdoor temperature. When activated, a signal shall be send through BMS system to activate the induced fan motor of the gas burner. Gas burner shall be energized and the burner ignition sequence begins. The heater is subject to a discharge high-temperature limit controller set to 95°F (adjustable). If the supply air temperature exceeds the HTL setpoint, it will take control of the heater reducing the heating capacity of the heat to maintain its maximum allowable setpoint.
 - 5) Demand controlled ventilation: For unit intallation with CO2 sensor and demand control ventilation module outside air damper position shall be modulated by CO2 sensor output signal.
 - 6) When the space pressurization sensor

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reaches space pressurization limits, usually 0.05"w.g. (adjustable), the exhaust fan shall turn ON, and the exhaust damper shall open to its minimum position. The exhaust fan shall turn OFF, and the exhaust damper shall close when space pressurization sensor drops below setup point.

b. Unoccupied Cycle:

- 1) The unit operates in concert with building peripheral heating provided by the existing finned tube radiation. The unit remains in the System-OFF condition until such time that the space temperature drops 4 degrees F below the night time setback temperature setpoint in heating mode.
- 2) The outside air intake and exhaust dampers shall be fully closed at all times during the Unoccupied Mode, and the exhaust fan shall be OFF.
- 3) The HVAC UNIT supply fan is cycled ON to maintain the setback space temperature of 50°F. On a drop in space temperature below the setback setpoint the HVAC UNIT fans are energized and the burner is energized.
- 4) The heater is subject to a discharge high-temperature limit (HTL) controller set to 95°F (adjustable). If the supply air temperature exceeds the HTL setpoint it will take control of the heater reducing the heating capacity of the heat to maintain its maximum allowable setpoint.
- 5) On a rise in space temperature above the night setback temperature by a differential of 2°F (adjustable) the fan shall be commanded OFF, and the furnace shall be de-energized.

4. Economizer Mode:

- a. The enthalpy controller determines the activation of the economizer mode. The enthalpy sensors compare total heat content of the indoor air and outdoor air to determine the most efficient air source. The Outdoor Air Damper will modulate between the

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adjustable minimum position and full open to maintain space temperature at the Economizer set point.

- b. The Outdoor Air Damper, Exhaust Air Damper and Recirculation Damper operate simultaneously and interlocked, from fully closed to fully open as follows:
 - 1) When Outdoor Air Damper is fully open, the Exhaust Air Damper is fully open and the Recirculation Damper is fully closed.
 - 2) When Outdoor Air Damper is fully closed, the Exhaust Air Damper is fully closed and the Recirculation Damper is fully open.
 - 3) For any other intermediate position of the Outdoor Air Damper, the Exhaust Air Damper and Recirculation Damper will modulate inversely proportional to each other's position following any modulation of the Outdoor Air Damper above to minimum outdoor air position.
- c. The Outdoor Air Damper will be set to its adjustable minimum position if the Economizer function is disabled or if the Discharge Temperature Sensor has failed.
- d. Economizer mode shall be correlated with the occupied mode only, and shall be disabled in unoccupied mode.

3.04 EXISTING VARIABLE AIR VOLUME BOXES (VAV)

- A. General: Terminal boxes shall be provided with box manufacturer furnished and commissioned Direct Digital Controllers, sensors, relays, or other control equipment to accomplish the sequence described below. The terminal box manufacturer shall provide specified and scheduled DDC control components to ensure the unit functions as designed. BAS Contractor to provide field wiring and devices not being furnished and installed by equipment manufacturer in the factory.
- B. Existing VAV controllers shall be provided (N.I.C.) with integral actuator, CFM transducer, and temperature sensor with set point adjust, discharge air sensor, transformers, disconnect switches, and all necessary equipment required to meet this sequence of operation.

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C. Sequence of Operations:

1. Summer (Cooling) Mode:

a. Occupied Cycle:

- 1) As the zone space temperature rises above the thermostat temperature set point, the terminal box DDC controller shall reset the airflow volume higher until it reaches its maximum airflow set point.
- 2) As the zone space temperature falls below the thermostat temperature set point, the terminal box DDC controller shall reset the airflow volume smaller until reaches its minimum airflow set point.

b. Unoccupied Cycle

- 1) In this mode usually there is no airflow, except when the space temperature raises above the high limit value. Terminal box DDC controller shall reset the airflow volume at maximum set point, regardless supply fan operation at the RTU, which will cycle to maintain the space temperature under the high limit set point (see RTU sequence of operations above).

2. Winter (Heating) Mode:

a. Occupied Cycle:

- 1) As the zone space temperature falls below the thermostat temperature set point, the terminal box DDC controller shall reset the airflow volume higher until it reaches its maximum airflow set point.
- 2) As the zone space temperature rises above the thermostat temperature set point, the terminal box DDC controller shall reset the airflow volume smaller until reaches its minimum airflow set point.

b. Unoccupied Cycle

- 1) The setback space temperature shall be maintained by the existing perferal finned tube radiation. RTU unit shall only be activated when the space temperature drops 4 degrees F under the night setback temperature.

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- 2) Terminal box DDC controller shall reset the airflow volume at maximum set point, regardless supply fan operation at the RTU, which will cycle to maintain the space temperature at the night time set point (see RTU sequence of operations above).

3.05 BOILER

- A. Heating mode shall be initiated when outside temperature falls below 55 °F, adjustable. The designated lead hot water pump (see sequence for pumps below) shall be engaged and maintain at least minimum water flow required by the lead boiler.
- B. Control of the boiler and burner management systems is accomplished by Boiler Factory provided programmable logic controllers (PLC) and single loop controllers (SLC) furnished by the respective vendors. Appropriate submittals and design documents for details and sequences of operations shall be provided by the vendor supplying the boiler and burner control management system.
- C. Upon a command to start the boiler, the Boiler Factory control panel will first command the selected lead primary water pump to start. After commanding the lead water pump to start and receiving positive motor running indication via a motor leg current switch, the Boiler Factory control panel will open the lead boiler's isolation valves and the boiler flow switch will enable the boiler. The Boiler Factory control panel will monitor end switches on the isolation valves and will initiate the start of the lag Boiler if the isolation valve limit switch indication is not received.
- D. When the heating mode is initiated, the boiler shall be engaged at full power. After the minimum required water flow through the boiler is proved by a flow sensor, the control gas valve, forced draft fan, and the burner, shall be engaged in sequence as programmed.
- E. The control gas valve of the boiler shall modulate to maintain the hot water supply temperature at the setup point, usually 200 °F, adjustable, based on a schedule as function of the outdoor temperature.
- F. Should the boiler fail while in operation, its associated isolation valve will close, and an alarm will be initiated.

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- G. The following Boiler System points from the Factory Lon Communication Card (or gateway) shall be adjusted, monitored and/or alarmed:
1. Boiler hot water set point ($^{\circ}$ F)
 2. Header hot water supply temperature ($^{\circ}$ F)
 3. Header hot water return temperature ($^{\circ}$ F)
 4. Boiler run status
 5. Boiler entering water temp ($^{\circ}$ F)
 6. Boiler leaving water temp ($^{\circ}$ F)
 7. Boiler general fault
 8. Boiler natural gas flow (scfm)
 9. Boiler water flow (gpm)
 10. Boiler low water cut-off.
 11. Boiler natural gas pressure (inch wc)
 12. Combustion air damper status
 13. Combustion air fan status
 14. Boiler exhaust temp ($^{\circ}$ F)
 15. Boiler output capacity (mbh or kw)

3.06 PUMPS P-1 AND P-2 (lead lag configuration)

- A. One of the pumps will be designated as a lead pump, and the other pump automatically shall be indexed as standby pump (or lag pump). Pump assignment will be a manual function, initiated at the boiler control panel, and/or pump control panel. For systems with one pump only, the lead-lag sequence does not apply.
- B. Pump operation is interlocked with boiler operation, and is initiated by the boiler control system as described above.
- C. The variable frequency drive (VFD, where applicable) controller associated with the pump in operation, modulates the pump speed (RPM) to maintain the pressure drop between the discharge and suction line, measured by a differential pressure transmitter at the set point.
- D. The minimum water flow to be maintained in the system, at any time when a heating load occurs, is either the minimum boiler water flow, or the water flow corresponding to the minimum pump speed required by the VFD, whatever is higher.

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- E. In the event of a failure of the lead pump, the stand by pump (the lag pump) shall automatically start, and an alarm signal shall be initiated.
- F. The assignment of the lead and lag pumps shall change periodically based on a predetermined schedule.
- G. The following pump system points shall be adjusted, monitored and/or alarmed:
 - 1. Hot water pump run status (each pump)
 - 2. Pump failed status (each pump)
 - 3. Hot water pump flow (gpm)
 - 4. Pump rpm (each pump)
 - 5. System pressure drop (ft of water)

3.07 COMBUSTION AIR FAN AND DAMPER CONTROL

- A. The motorized combustion air damper and the combustion air fan shall be interlocked with boiler burner operation.
- B. The combustion air damper shall automatically open, when the boiler burner operates. The combustion air damper shall automatically close, when the burner is off.
- C. Failure of the damper to open, or failure of the fan to run, when the boiler controller send a signal to boiler to operate, shall initiate a failure signal and an alarm.

3.08 ELEVATOR MACHINE ROOM EXHAUST FAN, EF-1, AND ASSOCIATED SMOKE DAMPER

- A. Smoke damper shall be normally closed.
- B. Fan shall be continuously ON, except for maintenance, as required.
- C. When the smoke detector associated with elevator shaft smoke damper, is activated by the presence of smoke, it shall send a signal to open the shaft smoke damper, and send an alarm signal to the fire alarm system and to BMS.

3.09 SPACE TEMPERATURE CONTROL FOR EXISTING PERIMETER HEATING AND OTHER EXISTING HOT WATER HEATING EQUIPMENT

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- A. Existing perimeter hot water heating, and other existing heating equipment which is not part of this contract, such as existing convectors, unit heaters, and cabinet heaters, shall be fully integrated with Building Management Control system and operate in accordance with this section of operations.
- B. The Contractor shall determine status of existing control components for the existing heating equipment, not part of this contract, such as local thermostats and zone control valves, and make sure they are fully operational, and inform the facility if they are not.
- C. The hot water control valve installed on the hot water return main branch from the zone space, shall cycle on and off to maintain the space temperature at the setpoint, in accordance with the appropriate cycle at the time (occupied or un-occupied), usually 68 °F in occupied cycle (adjustable), and 50 °F in unoccupied cycle (adjustable). The perimeter heating during the night time shall cycle ON/OFF at two (2) degrees differential from the set point. If temperature drops four (4) degrees below the setpoint, then the RTU associated with that space shall be engaged (see RTU sequence above).

END OF SECTION

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SECTION 232003
THERMOMETERS AND GAUGES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Thermometers and gauges provided as part of factory-fabricated equipment are specified as part of the equipment assembly in other Division-23 Sections.

1.02 RELATED SECTIONS

- A. Division 23 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Product Data shall include calibrated performance curves.
- B. Schedule for thermometers and gages indicating manufacturer's number, scale range, and location for each.
- C. Operation and Maintenance manuals.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

- A. Codes and Standards
1. UL Compliance: comply with applicable UL standards pertaining to gauges.
 2. ANSI and ISA Compliance: comply with applicable portions of ANSI and Instrument Society of America (ISA) standards pertaining to construction and installation of thermometers and gauges.
 3. American Society of Mechanical Engineers (ASME): ASME B40.200, Thermometers, Direct Reading and Remote Reading; ASME B40.100, Pressure Gauges and Gauge Attachments.

PART 2 - PRODUCTS

2.01 MATERIALS AND MANUFACTURERS

- A. Glass Thermometer:
1. Provide fabricated from materials, and with capacities and ranges, designed and constructed for use in service.

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- a. Case: die cast aluminum finished in baked epoxy enamel or powder coated, glass front, 9" long.
- b. Adjustable Joint: die cast aluminum, finished to match case, 180° adjustment in vertical plane, 360° adjustment in horizontal plane, with locking device.
- c. Tube and Capillary: non-toxic liquid filled, with magnifying lens, 1% scale range accuracy, shock mounted.
- d. Scale: non-reflective aluminum with permanently etched markings. The scale shall be V-shaped for optimum readability.
- e. Stem: copper-plated steel, brass, or aluminum for separable socket or installation in mounting bracket and of length to suit installation.
 - 1) Design for Air-Duct Installation: With ventilated shroud.
 - 2) Design for Thermowell Installation: Bare stem.
- f. Connector: 1-1/4", with ASME B1.1 screw threads.
- g. Range: conform to the following:
 - 1) Hot Water: 30° F. - 240° F
 - 2) Duct: 30° F - 180° F

2. Approved Manufacturers:

Miljoco Corporation
Weiss Instruments, Inc.
Weksler Instruments
Or approved equal

B. Dial Type Insertion Thermometers:

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1. Provide fabricated from materials, with capacities and ranges, designed and constructed for use in service.
 - a. Type: bi-metal, stainless steel case and stem, 5" diameter dial, dust and leak proof, of stem diameter and length to suit installation.
 - b. Accuracy: $\pm 1\%$ of dial range.
 - c. Range: conform to the following:
 - 1) Hot Water: 30° F. - 240° F.
 - 2) Duct: 30° F. - 180° F.

2. Approved Manufacturers:

Miljoco Corporation
Weiss Instruments, Inc.
Weksler Instruments
Or approved equal

C. Thermometer Wells

1. Provide thermometer wells constructed of brass or stainless steel, pressure rated to match piping system design pressure; length as required to hold thermometer with a 2" extension for insulated piping. Provide cap nut with chain fastened permanently to thermometer well.
2. Manufacturer: same as thermometers.

D. Duct-Thermometer Mounting Brackets: Flanged bracket with screw holes, for attachment to air duct and made to hold thermometer stem.

E. Pressure Gauges:

1. Provide pressure gauges of materials, capacities and ranges, designed and constructed for use in service as required.
 - a. Type: General use, 1% accuracy, ANSI B40.1 grade A, bronze bourdon type, bottom connection unless otherwise indicated.
 - b. Case: drawn steel or brass, cast aluminum, shatterproof glass lens, 4-1/2" diameter.

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- c. Connector: brass with 1/4" male NPT. Provide protective syphon when used for steam service.
- d. Scale: white coated aluminum, with permanently etched markings.
- e. Range: conform to the following:
 - 1) Water: 0 - 200 psi.

2. Approved Manufacturers:

Ametek/U.S. Gauge.
Weiss Instruments, Inc.
Weksler Instruments
Or approved equal

F. Pressure Gauge Cocks:

- 1. Provide pressure gauge cocks between pressure gauges and gauge tees on piping systems. Construct gauge cock of brass with 1/4" female NPT on each end, and "T" handle brass plug.
 - a. Syphon: 1/4" straight coil constructed of brass tubing or loop-shaped section of brass, stainless-steel or steel pipe with 1/4" male NPT on each end.
 - b. Snubber: 1/4" brass bushing with corrosion resistant porous metal disc, through which pressure fluid is filtered. Select disc material for fluid served and pressure rating. Include extension for use on insulated piping.
- 2. Manufacturer: same as for pressure gauges.

G. Pressure and/or Temperature Gauge Connector Plugs:

- 1. Provide gauge connector plugs rated for 500 psi at 200° F. Construct of brass and finish in nickel-plate equip with 1/4" or 1/2" NPS fitting, with self-sealing valve core type neoprene gasketed orifice suitable for inserting 1/8" OD probe assembly from dial type insertion pressure and/or temperature gauge. Equip orifice with gasketed screw cap and chain. Provide extension, length equal to insulation thickness, for insulated piping.
- 2. Approved Manufacturers:

Miljoco Corporation.
Sisco, A Spedco, Inc. Co.
Watts Regulator Co.
Or approved equal

PART 3 - SUPPLEMENTAL EXECUTION

3.01 INSTALLATION

A. Temperature Gauges

1. Install temperature gauges in accordance with the manufacturer's printed installation instructions, in vertical upright position and tilted so as to be easily read by observer standing on the floor. Each thermometer shall have an isolation shutoff valve for service and removal. Install direct-mounted thermometers in thermowells.

Thermometers for Sensing Liquid Temperature: provide with separable sockets. Sockets for use in insulated piping, insulated tanks or similar equipment shall have extension lagging neck type, of length as required to compensate for insulation thickness, and proper immersion.

Duct Thermometer Support Flanges: install in wall of duct where duct thermometers are required or indicated on the Drawings. Attach to duct with screws.

2. Locations: install in the following locations, and elsewhere as indicated on the Drawings:
 - a. At inlet and outlet of boiler
 - b. At inlet and outlet of hot water coil in air handling unit
 - c. At outside-air, return-air, and mixed-air ducts

B. Pressure Gauges

1. Install pressure gauges in accordance with the manufacturer's printed installation instructions, in piping tee with pressure gauge cock, located on pipe at most readable position.

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2. Locations: install in the following locations, and elsewhere as indicated on the Drawings:
 - a. At suction and discharge of each pump
 - b. At discharge of each pressure reducing valve
 - c. At duct as shown on the Drawings
3. Pressure Gauge Cocks: install in piping tee with snubber. Install syphon for steam pressure gauges.

3.02 ADJUSTING AND CLEANING

- A. Adjusting: adjust faces of gauges to proper angle for best visibility.
- B. Cleaning: clean windows of thermometers and gauges and factory-finished surfaces. Replace cracked or broken windows; repair any scratched or marred surfaces with manufacturer's touch-up paint.

END OF SECTION

SECTION 232116
HYDRONIC SPECIALTIES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Hydronic specialties furnished as part of factory-fabricated equipment are specified as part of the equipment assembly in other Division-23 Sections.

1.02 RELATED SECTIONS

- A. Division 23 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Product Data: Include flow and pressure drop curve or chart for each type and size of hydronic specialty. For the Water Flow Control Valve and Balancing Valves, incorporate a calibrated chart and the computed flow rates based on the equipment actually installed; these rates shall be indicated on a flow diagram, which shall be submitted for approval.

Air Separators and Compression Tank: National Board Form U-1 denoting compliance, one form for each.

- B. Shop Drawings: Submit schedule indicating manufacturer's figure number, size, location, capacities, and features for each hydronic specialty.

- C. Maintenance data.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

- A. Codes and Standards: ASME Compliance: Manufacture and install hydronic specialties in accordance with ASME B31.9: Building Services Piping.

PART 2 - PRODUCTS

2.01 MATERIALS AND MANUFACTURERS

- A. Provide factory-fabricated hydronic specialties recommended by the manufacturer for use in service indicated. Provide sizes and connections that properly mate with pipe, tube and equipment connections.

- B. Balancing Valves with Read-out Ports

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1. Where the Drawings indicate a balancing valve in the water piping, provide a combination shut-off and balancing valve with read-out ports of heavy brass construction up to 2" and of cast-iron construction 2-1/2" and above, with visible graduated dial indicator and read-out ports built for a working water pressure of 250 psig at 250° F. Valve shall be globe or ball type. Valve shall be complete with a locking mechanism that can be set at a balance point, so that the valve may be opened and closed, but not opened beyond the pre-set balance point.

2. Manufacturers:

Armstrong Pumps, Inc.
Bell & Gossett ITT; Fluid Handling Div.
Grinnell Mechanical Products by Tyco
Or approved equal

C. Air Vents

1. Manual Air Vent shall consist of a 1/4" bronze pet cock with lever handle, fitted into a pipe tee.
2. Automatic Air Vent: Provide automatic air vent designed to vent automatically with float principle, stainless steel or non-ferrous float and mechanisms, cast-iron or brass body, pressure rated for 125 psi, 1/2" NPS inlet and outlet connections if required. (Sarco Co. Type 13W, Spirotherm, Inc. Spirotop)
3. Manufacturers:

Armstrong Pumps, Inc.
Bell & Gossett ITT; Fluid Handling Div.
Hoffman Specialty ITT; Fluid Handling Div.
Or approved equal

D. Flow Control Valves (Check Valves)

1. Provide flow control valves pressure rated for 125 psi, containing lift check assembly which will automatically open by means of pump flow pressure, and automatically close when pump is not operating. Provide with means to manually open in case of pump failure.

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- a. Threaded Ends 2-1/2" and Smaller: cast-iron body, bronze check mechanism, screw-in bonnet, straight or angle pattern.
- b. Soldered Ends 4" and Smaller: cast-bronze body, bronze check mechanism, screw-in bonnet, straight or angle pattern.
- c. Flanged Ends 3" and Larger: cast-iron body, bronze check mechanism, screw-in bonnet, straight or angle pattern.

2. Manufacturers:

Armstrong Pumps, Inc.
Bell & Gossett ITT; Fluid Handling Div.
Taco, Inc.
Or approved equal

E. Air Separators

1. Provide one of the following type of air separators pressure rated for 125 psi. Selection shall be based upon system flow including head loss and velocity criteria in order to maintain efficiency. Nominal head loss shall not exceed 1 foot and nominal entering velocity shall not exceed 4 feet per second unless the unit is specifically designed and manufactured for higher velocities to maintain efficiency.

- a. Dip Tube Fittings: Provide dip tube fittings in boilers to prevent free air collected in boiler from rising into system.
- b. In-line Air Separators: Provide in-line air separators. Construct sizes 1-1/2" and smaller of cast iron; and sizes 2" and larger of steel complying with ASME Boiler and Pressure Vessel Code and stamped with "U" symbol.

2. Manufacturers:

Amtrol, Inc.
Armstrong Pumps, Inc.
Bell & Gossett ITT; Fluid Handling Div.
Or approved equal

F. Compression Tank

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1. Provide compression tank, of the capacity indicated on the Drawings. Tank shall be constructed for 125 psig working pressure according to ASME code. Tank shall be guaranteed leakproof by the manufacturer and the exterior surface shall be coated with a rust preventive material. Provide a drain tapping at bottom of tank with a drain fitting.
 - a. Provide on the inlet to the compression tank, if required, a tank fitting for the proper control of air in the tank. Tank fitting shall be iron body with non-ferrous internal parts, constructed for 125 psig working pressure and shall have a separate manual copper vent tube for establishing the proper air volume in the compression tank on initial filling.
 - b. Provide in a tapping on the compression tank a drain valve with hose threaded outlet and with means to introduce air to the tank to facilitate drainage.

2. Manufacturers:

Amtrol, Inc.
Armstrong Pumps, Inc.
Bell & Gossett ITT; Fluid Handling Div.
Or approved equal

G. Pump Discharge Check Valves

1. Provide non-slam check valve with spring-loaded disc and calibrated adjustment feature permitting regulation of pump discharge flow and shutoff. Design valves to permit repacking under full line pressure, and with bolt-on bonnet. Provide flanged cast-iron valve body, pressure rated for 175 psi, maximum operating temperature of 300° F. Provide straight or angle pattern.

2. Manufacturers:

Amtrol, Inc.
Armstrong Pumps, Inc.
Bell & Gossett ITT; Fluid Handling Div.
Or approved equal

H. Pressure Reducing Valves

1. Where shown on the Drawings, provide in the make-up water supply line, an iron body pressure reducing

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valve with brass internal parts. Reducing valve shall be provided with a strainer and a check valve to prevent back flow of water when city water pressure is less than the system pressure. Valve setting shall be as indicated on the Drawings

2. Manufacturers:

Amtrol, Inc.
Armstrong Pumps, Inc.
Bell & Gossett ITT; Fluid Handling Div.
Or approved equal

I. Make-up Water Feeders

1. Provide a float-operated feeder used to add make-up water to fill tank. Feeder shall be mounted to the tank with top and bottom equalizing lines and feeds water through a separate pipe, permitting anti-siphon air gap. Valve shall be stainless steel with monel seat and protected by strainers.
2. Manufacturers:
McDonnell & Miller ITT;
Fluid Handling Div.
Approved equal.

PART 3 - EXECUTION

3.01 SUPPLEMENTAL INSTALLATION

- A. Balancing Valves: Install balancing valves where shown on the Drawings. After hydronic system balancing has been completed, mark each balancing valve with stripe of yellow lacquer across body and stop plate to permanently mark final balanced position. (Refer to Section 230594 Balancing of Systems)
- B. Air Vent
 1. Manual Air Vent: Install manual air vent on each hydronic terminal at highest point, and on each hydronic piping drop in direction of flow for mains, branches, and runouts, and elsewhere as indicated on the Drawings.
 2. Automatic Air Vent: Install automatic air vent at top of each hydronic riser and elsewhere as indicated on the Drawings. Install shutoff valve between riser and air vent; pipe outlet to suitable plumbing drain, or as indicated on the Drawings.

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- C. Flow Control Check Valves: Install flow control valves on discharge of each pump servicing hydronic system or zone, and elsewhere as indicated on the Drawings. Install with check mechanism in upright position, with adequate clearance of service and replacement. Screw check down for automatic operation.
- D. Air Separators
- In-Line Air Separators: Install in-line air separators in pump suction lines. Connect inlet and outlet piping. Run piping to compression tank with 1/4" per foot (2%) upward slope towards tank. Install blowdown valve and piping. Remove and clean strainer after 24 hours and again after 30 days of system operation. Include this information in the maintenance data.
- E. Compression Tanks: Install compression tanks on trapeze hangers sized for tank fully loaded, or otherwise as indicated on the Drawings. Install tank fitting in tank bottom and charge tank in accordance with manufacturer's instructions.
1. Tank Fittings: Install tank fittings in bottom of compression tanks. Use manual vent for initial fill to establish proper water level in tank.
- F. Pump Discharge Valves: As indicated on the Drawings, install pump discharge valves on each pump discharge line in lieu of separate shutoff valve and check valve. Install in horizontal or vertical position with stem in upward position; allow clearance above stem for check mechanism removal. After hydronic system has been completed, mark calibrated name plate with stripe of yellow lacquer to permanently mark final balanced position.
- G. Pressure Reducing Valves: Install where indicated on the Drawings, and in accordance with manufacturer's installation instructions.
- H. Manual Water Flow Rate Control: Install at each location as shown on the Drawings. For pipe sizes over 3", Insert shall be installed with gaskets between standard ASA pipe flanges. A globe valve furnished with square operating nut shall be provided in the piping on the discharge side of the insert at a minimum distance of 12".
- I. Make-Up Water Feeders: Install on the make-up water system line in the location shown on the Drawings.

END OF SECTION

SECTION 232123
HYDRONIC PUMPS

PART 1 - GENERAL

1.01 RELATED SECTIONS

- A. Division 23 Sections
- B. Division 26 Sections

1.02 SUPPLEMENTAL SUBMITTALS

- A. Product Data: Submit current accurate pump characteristic performance curves with selection points clearly indicated.
- B. Shop Drawings: Schedule: Pump schedule showing pump specifications, application, layout and connections.
- C. Wiring Diagrams: Submit manufacturer's electrical requirements for the power supply wiring. Power supply wiring shall be provided by the Contractor. Submit manufacturer's wiring diagrams for interlock and control wiring. Clearly differentiate between portions of wiring that are factory installed and portions to be field installed by the Contractor.
- D. Provide a set of manufacturer's guarantees for all equipment supplied.
- E. Maintenance data.
- F. Videotapes produced during the training.
- G. Certificate: Contractor's start-up and demonstration affidavit.

1.03 SUPPLEMENTAL QUALITY ASSURANCE

- A. Codes and Standards
 - 1. HI Compliance: Design, manufacture and install HVAC pumps in accordance with HI: Hydraulic Institute Standards.
 - 2. UL Compliance: Design, manufacture and install HVAC pumps in accordance with UL 778: Motor Operated Water Pumps.
 - 3. All appliances regulated by the New York City Construction Codes shall be listed and labeled (reference MC 301.4, MC 301.6). Testing of material and equipment shall be in accordance with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is

not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department (MEA) before the effective date of the NYC Construction Codes may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.

- B. Supply nameplate data on pumps and drives.
- C. Before submitting any equipment shop drawings for approval, the Contractor, and the Equipment Vendor and Manufacturer shall coordinate the controls required for the system.

1.04 MANUFACTURER WARRANTY

- A. Pumps guarantee shall be for five years. The guarantee period start date shall be the date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MATERIALS AND MANUFACTURERS

- A. Pumps of the same type shall be manufactured by the same manufacturer.
- B. In-Line Circulating Pumps
 - 1. Provide in accordance with the following:
 - a. Type: Horizontal mount, vertical split case, oil-lubricated, designed for 125 psi working pressure and 225°F continuous water temperature.
 - b. Body: Cast iron, with suction and discharge gage tappings.
 - c. Shaft: Manufacturer to specify type of hardened alloy steel.
 - d. Bearings: Oil-lubricated bronze ball bearings with an oil level indicator.
 - e. Seal: Mechanical, with carbon seal ring and ceramic seat.
 - f. Motor: Non-overloading at any point on pump curve, open, drip-proof, oil-lubricated ball bearings, resilient mounted construction, built-in thermal overload protection on single phase motors.

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- g. Coupling: Self-aligning flexible coupling.
- h. Impeller: Enclosed type, hydraulically and dynamically balanced, and keyed to shaft.

2. Approved Manufacturers:

Bell & Gossett ITT; Fluid Handling Div
MEPCO (formerly Dunham-Bush, Inc.)
Taco, Inc.
Or approved equal

C. End Suction Pumps

1. Provide in accordance with the following:

- a. Type: Horizontal mount, single stage, vertical split case, flexible coupling, base mounted, designed for 175 psi working pressure, with true back pull, capable of being serviced without disturbing piping connections.
- b. Casing: Cast iron, 125 psi ANSI flanges, tappings for gage and drain connections, and venting pet cock at its highest point.
- c. Shaft: Heat-treated carbon steel.
- d. Bearings: Regreasable ball bearings.
- e. Seal: Mechanical, with carbon seal ring and ceramic seat.
- f. Motor: Open, drip-proof, regreasable ball bearings.
- g. Impeller: Enclosed type, hydraulically and dynamically balanced, keyed to shaft and secured with locking screw.
- h. Baseplate: Structural steel with welded cross members, and open grouting area.
- i. Coupling: Flexible, capable of absorbing torsional vibration, equipped with coupling guard with opening for meter reading.

2. Approved Manufacturers:

Bell & Gossett ITT; Fluid Handling Div
MEPCO (formerly Dunham-Bush, Inc.)
Taco, Inc.
Or approved equal

- D. Motor Enclosures and Temperature Rise: Motors subject to excessive dust or abrasive shall be of the totally

enclosed type. Motors subject to dripping oil or water shall be of the drip proof or otherwise enclosed type. Conditions constituting a hazard from an explosive standpoint shall require a motor of the explosion proof class. Temperature rise with Class "A" insulation shall be based on the following: Open frame: 40o C.; totally enclosed and fan cooled: 55o C. Temperature rises shall conform to A.I.E.E. Standards for continuous and/or short time rated motors. All motors, motor starters, variable frequency drives and LonWorks cards (for variable speed pumping systems) shall be in accordance with the requirements of Section 262419, Motors and Control Equipment, regardless if the pumping system is packaged or non-packaged.

PART 3 - EXECUTION

3.01 SUPPLEMENTAL INSTALLATION

A. Install pumps in accordance with the following:

1. Access: Provide access space around pumps for service, but in no case less than that recommended by the manufacturer.
2. Install in-line pumps in piping system with supports and vibration isolators recommended by the manufacturer.

B. Electrical Wiring

1. The Contractor shall install electrical devices furnished by manufacturer but not specified to be factory-mounted. Furnish copy of manufacturer's wiring diagram submittal to Electrical. Verify that electrical wiring installation is in accordance with manufacturer's submittal and installation requirements of Division 26 Sections. Do not proceed with equipment start-up until wiring installation is acceptable.
2. The Contractor shall provide the control wiring between field-installed controls, indicating devices, and pump control panels. The Contractor shall provide integration of monitoring and alarm functions by integrating the pumping system into the Building Management System/Direct Digital Control, BMS/DDC.
3. Control interlock wiring between pumps and between pumps and field-installed control devices that are not factory installed and power wiring shall be provided by the Contractor. Temperature Controls shall be provided by the System Contractor.
4. All pumps shall be installed on the 24-hour panel for continuous uninterrupted pump operation (as called for by the outside thermostat when ambient temperature is at 40 degrees F. or less.)

- C. Piping Connections: Provide piping, valves, accessories, gauges, supports, and flexible connections.

3.02 INTERDISCIPLINARY TESTS AND FUNCTIONAL PERFORMANCE TESTS

- A. Interdisciplinary Pre-Start-Up and Start-Up Tests:

The Contractor shall conduct interdisciplinary pre-start up and start up tests as per the manufacturer's start up procedures. The Contractor shall submit signed start up affidavit signed by the factory authorized service representative indicating that all of the manufacturer's pre-start up and start up procedures have been successfully completed.

- A. Functional Performance Tests:

Contractor shall also submit signed functional performance testing affidavit signed by the factory authorized service representative indicating that all of the manufacturer's functional performance tests have been successfully completed. Refer to the functional performance tests as defined in Section 230923 since a BMS/DDC system is to be provided and the equipment is to be integrated into the BMS/DDC system.

END OF SECTION

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SECTION 232500
WATER TREATMENT (HVAC)

PART 1 - GENERAL

1.01 RELATED SECTIONS

A. Division 23 Sections

1.02 SUPPLEMENTAL SUBMITTALS

- A. The Water Treatment Firm shall be approved by the City of New York. The Contractor shall submit a list of installations of similar capacity in New York City, which have been successfully tested by the proposed water treatment firm.
- B. Product data defining chemical products being supplied.
- C. Water Analysis: the Water Treatment Firm shall make an analysis of the raw water supply to the building and recommend the chemical dosages to be used and shall check biweekly on the effectiveness of the treatment, prior to final payment.
- D. Submit samples of the laboratory standard forms, for approval.
- E. Submit written copies of the test results conducted biweekly on the systems being treated on the Water Treatment Firm/Laboratory Standard Pre-approved Forms. List condition of the water, chemical dosages and all other items and accessories required.
- F. Operation Data: provide copy of written instructions on the procedures, tests required and dosages to be used for the chemical treatment of the system.
- G. Written guarantee by the Water Treatment Firm and the Contractor.
- H. Videotapes produced during the training.
- I. Certificate: Contractor's start-up and demonstration affidavit.

1.03 QUALITY ASSURANCE

A. Consultant Water Treatment Firm:

1. Provide the services of an independent professional water treatment firm for the chemical treatment of the hydronic systems installed under the Work of this Contract.

2. Failure of the Contractor to submit the biweekly test reports during the temporary heat time period (if any) and during the one-year warranty period after Substantial Completion shall require the Contractor to secure the diagnostic inspection services of a metallurgist who is a licensed Professional Engineer registered in the State of New York. The expenses for securing the services of the metallurgist and any costs associated with performing any required remedial work identified by the metallurgist shall be borne by the Contractor.

1.04 GUARANTEE

- A. The Consultant Water Treatment Firm and the Contractor shall guarantee in writing, that the water systems and any component parts thereof, will experience no more than minimal scale formation, corrosion, pitting, algae and slime growth, for a period of one year from the date of Substantial Completion of this Project, when treated in strict accordance with the Water Treatment Firm's recommendations. The initiation of the one-year warranty period shall not include the time prior to Substantial Completion. Water treatment shall be performed on the hydronic equipment as soon as it is filled with water. Bi-weekly testing and reporting of the test results shall continue for the one-year duration of the warranty period and also during any time period that the equipment is used for temporary heat.

1.05 PERFORMANCE REQUIREMENTS

- A. Base chemical treatment performance requirements on quality of water available at Project site, HVAC system equipment material characteristics and functional performance characteristics, operating personnel capabilities, and requirements and guidelines of authorities having jurisdiction.

PART 2 - PRODUCTS

2.01 EQUIPMENT FOR SYSTEMS REQUIRING TREATMENT

- A. Refer to Drawings for capacities of all equipment and systems, and the entering and leaving temperatures of water for all equipment and systems.

2.02 WATER TREATMENT FIRMS

Cascade Water Services, Inc.
Nalco Chemical Company
Aqua Testing Inc.
Approved equal.

2.03 MATERIALS

- A. Water Treatment Unit (Shot Feeder): Provide water treatment unit of capacity and constructed of steel as shown on the Drawings for introducing chemicals in the hydronic systems. Provide valve for loading, drain valve in bottom, and recirculating valves on each side.
- B. Chemicals: Chemicals shall be as recommended by the Water Treatment Firm.
- C. pH Comparator: Suitable range to conform to the chemical treatment furnished.

2.03 TEST EQUIPMENT

- A. Metal test cabinet complete with sufficient glassware and reagents to make each of the following determinations once a day, for the period of the contract and the guarantee.
 - 1. pH by color comparator.
 - 2. Chemicals used by color comparator and titration.
 - 3. Total dissolved solids by concentration hydrometer.
- B. Test Kit: Manufacturer recommended equipment and chemicals, in a carrying case, for testing pH, total dissolved solids, dissolved oxygen, biocount, chloride, and total alkalinity and for calcium hardness field tests.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install chemical feeders, complete with valves and piping, as indicated on the Drawings.
- B. Install test cabinet complete with all glassware and reagents, at location as directed by the Commissioner.

3.02 FIELD QUALITY CONTROL

- A. It is the intent of these specifications to provide complete systems of chemical treatment to protect all water systems from freezing, scale formations, corrosion, algae and slime growth.
- B. Engage a factory-authorized service representative to perform startup service.
 - 1. Inspect field-assembled components and equipment installation, including piping and electrical connections. Report results in writing.

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2. Inspect piping and equipment to determine that systems and equipment have been cleaned, flushed, and filled with water, and are fully operational before introducing chemicals for water-treatment system.
3. Place HVAC water-treatment system into operation and calibrate controls during the preliminary phase of HVAC systems' startup procedures.

3.03 DEMONSTRATION

- A. Preliminary Requirements: Provide the services of the field service representative of Water Treatment Company for the following:
1. Inspect each water treatment feeder installation prior to the addition of chemicals.
 2. Supervise initial charging of the water system based on city water analysis.
 3. Instruct the City of New York Designated Personnel.
 4. Perform biweekly testing and submit test results starting as soon as the systems are filled with water and continue for one (1) year after Substantial Completion of the.

END OF SECTION

SECTION 233300
DUCTWORK ACCESSORIES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide duct accessories specified herein, shown on the Drawings along with all the auxiliary work needed for a complete and proper installation. The types of ductwork accessories specified in this Section include the following: turning vanes, duct hardware, duct access doors and flexible connections.

1.02 RELATED SECTIONS

- A. Division 23 Sections
- B. Division 26 Sections

1.03 SUPPLEMENTAL SUBMITTALS

A. Shop Drawings: Submit manufacturer's assembly-type shop drawings and shop standards. Submit SMACNA Figure Numbers for each shop fabricated item.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

A. Codes and Standards

1. SMACNA Compliance: Comply with applicable portions of SMACNA: HVAC Duct Construction Standards, Metal and Flexible, 2005 edition.
2. Industry Standards: Comply with SMACNA recommendations pertaining to construction of ductwork accessories, except as otherwise indicated on the Drawings.
3. NYC Mechanical Code Compliance: Comply with applicable provisions of the NYC Mechanical Code Chapters 5, 6 and 7 and the manufacturer's installation instructions pertaining to installation of ductwork accessories.

PART 2 - PRODUCTS

2.01 MATERIALS AND MANUFACTURERS

A. Turning Vanes

1. Fabricated Turning Vanes: Provide fabricated turning vanes and vane runners, constructed in accordance with SMACNA: HVAC Duct Construction Standards, latest edition.

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2. Acoustic Turning Vanes: Provide acoustic turning vanes constructed of airfoil shaped aluminum extrusions with perforated faces and fiberglass fill.
3. Provide shop fabricated turning vanes or provide from one of the following manufacturers:

Anemostat Products Div.
Dynamics Corp. of America
Duro Dyne Corp.
Tuttle & Bailey, Hart & Cooley Mfg. Co.
Titus Product, Div. of Philips Inds.
Or approved equal

B. Duct Hardware

1. Provide test hole fittings for making air readings for the proper adjusting and testing of the ventilating systems. Material and gauge of the fittings shall be compatible with the duct material. Include screw cap and gasket. Size of fitting shall allow insertion of testing instruments and of length of fitting shall allow for the duct insulation thickness. "Duro Dyne", instrument test port, "Ventlock 699" are suitable for this purpose. If required, provide test hole fitting for microprocessor type of instrument reading either local or remote.
2. Provide shop fabricated duct hardware or provide from of one of the following manufacturers:

Duro Dyne Corp.
Young Regulator Co.

D. Fan Connections (Flexible Connections): (Ref. SMACNA HVAC Duct Construction Standards - Latest Edition)

1. Provide an airtight fabric neck at the inlet and at the outlet connections of all air handling units, supply fans and exhaust fans and where ductwork connects to vibration isolation equipment in accordance with MC.603.18.
2. Necks shall be not less than 3" nor more than 10" in width and both sides shall be secured with crimped lock seam the entire perimeter with galvanized sheet steel bands 3" wide. This assembly shall be securely fastened to ducts and fans, and the joints shall be made air tight. Necks shall not be oiled or painted. Neck fabric shall be one of the following materials:

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- a. Cotton duck, 10-ounces per square yard minimum weight, conforming to Federal Specifications CCC-C-428D (treated for fire, water, and mildew resistance)
 - b. Flameproof elastomeric coated glass fabric, weighing not less than 14-ounces per square yard, having a tensile strength of 200 psi (minimum) and having a heat resistance of up to 500° F. ("Thermafab", manufactured by Duro Dyne Corp., is an example of this material).
 - c. Close woven glass cloth, double neoprene coated, 28-ounces per square yard minimum weight.
3. Where ambient air temperature exceeds 100° F, use material No.2b or No.2c. Where materials are exposed to weather or corrosive fumes (acids, alkalies, garage or fume hood exhausts), use material No.2c.
 4. Provide shop fabricated fan connections or provide from one of the following manufacturers:

Duro Dyne Corp.
Flexhaust (The) Co.
- E. Smoke Detecting Devices: Provide opening in the ductwork for the smoke detecting devices at various locations, and as indicated on the Mechanical and Electrical Contract Drawings and Approved Shop Drawings. Mechanical Contractor shall install duct smoke detectors in the ductwork. Electrical Contractor shall furnish duct smoke detectors, and provide power wiring and control wiring for the duct smoke detectors.

PART 3 - SUPPLEMENTAL EXECUTION

3.01 INSTALLATION OF DUCTWORK ACCESSORIES

- A. Install ductwork accessories in accordance with manufacturer's installation instructions, with applicable portions of details of construction as shown in SMACNA standards, and in accordance with recognized industry practices to ensure that products serve intended function.
- B. Install turning vanes in square throat elbows in supply and exhaust air systems, and elsewhere as indicated on the Drawings.
- C. Install test hole fittings for making air readings, on both (opposite) sides of discharge duct from all supply and exhaust fans, at set dampers on supply and return branch ducts, and at other locations where shown on the Drawings

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for the proper adjusting and testing of the ventilating systems.

- D. Install doors in built-up casing to open against system air pressure, with latches operable from both sides.
- E. Coordinate as necessary to interface installation of ductwork accessories with other work.

3.02 FIELD QUALITY CONTROL

- A. Operate installed ductwork accessories to demonstrate compliance with requirements. Test for air leakage while system is operating. Repair or replace faulty accessories, as required to insure proper operation.

3.03 ADJUSTING AND CLEANING

- A. Adjusting: Adjust ductwork accessories for proper settings.
- B. Label access doors in accordance Section 230553: HVAC Identification.
- C. Cleaning: Clean factory-finished surfaces. Repair any marred or scratched surfaces with manufacturer's touch-up paint (Refer to Section 099000: Painting and Coating).

END OF SECTION

SECTION 233113
METAL DUCTWORK

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide all the metal ductwork used for the HVAC system, as specified herein, as shown on the Drawings and as needed for a complete and proper installation. The inserted section of ducts shall match the existing duct material and schedule.

1.03 RELATED SECTIONS

- A. Division 23 Sections

1.04 SUPPLEMENTAL SUBMITTALS

- A. Product Data

1. Submit Shop Standards for metal ductwork including gages, materials, type of joints, sealing requirements, method of fabrication and reinforcing. Shop standards shall be in accordance with the SMACNA HVAC Duct Construction Standards, latest edition.
2. Submit manufacturer's product data for factory-fabricated single wall round ductwork, duct sealant and cement, gasket materials, duct liner and sound traps; and installation instructions.
3. Include American Conference of Governmental Industrial Hygienists (ACGIH) figure numbers for hoods if applicable.

- B. Shop Drawings (N/A)

1.05 SUPPLEMENTAL QUALITY ASSURANCE

- A. Codes and Standards

1. SMACNA Standards: Comply with SMACNA's HVAC Duct Construction Standards Metal and Flexible Third Edition-2005 for fabrication and installation of metal ductwork.
2. NFPA Compliance: Comply with the NFPA 96-1984 as amended by MC 506.
3. Comply with the New York City Mechanical Code.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Sheet Metal:

1. Galvanized Steel: Lock-forming quality; ASTM A 653 G60 coating designation; mill-phosphatized finish for surfaces of ducts exposed to view.
2. Reinforcement Shapes and Plates: Galvanized steel reinforcement where installed on galvanized, sheet metal ducts; compatible materials for aluminum and stainless-steel ducts.
3. Tie Rods: Galvanized steel, 1/4" minimum diameter for 36" length or less; 3/8" minimum diameter for lengths longer than 36".

B. Gages of Metal for galvanized rectangular duct: Gages of metal shall be in accordance with Tables 2.1 through 2.28 of SMACNA HVAC Duct Construction Standards Third Edition - 2005. Duct shall be constructed to the pressure shown on the Drawings. The duct pressure classification shall default to the equipment external static pressure if the pressure levels are not shown on the Drawings.

C. Hangers and Supports

1. Rod Type Hangers and Angles: Hot dip galvanized steel with 2 locking nuts in place.
2. Strap Hangers: Same material as ducts except that galvanized-steel straps attached to aluminum ducts shall have contact surfaces painted with zinc-chromate primer.
3. Trapeze and Riser Supports: Steel shapes complying with ASTM A36. Same material as ducts.
4. Strap and Rod Sizes: Comply with SMACNA for sheet width and thickness and for rod diameters.
5. For ducts with a cross sectional area of 2 square feet or less, hangers shall be constructed of at least 1 inch by 1/16 inch steel strap. For ducts with a cross sectional area of over 2 square feet, hangers shall be constructed of at least 1 inch by 1/8 inch steel strap.

D. Miscellaneous Ductwork Materials:

1. Sheet Metal Screws, Machine Bolts, Rivets and Nuts: Tinned, cadmium plated or rust resistant materials.

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Bolts shall be button-head stove bolts, 1/4" x 3/4" unless otherwise specified.

2. Concrete Inserts: Steel or malleable iron, galvanized; continuously slotted or individual inserts conforming with MSS SP-58, Types 18 and 19, Class A-B.
3. Beam Clamps: For ducts with a cross sectional area of 2 square feet or less, clamp shall be Caddy Catalog Number 4H-Series Fig 2. For ducts with a cross sectional area of over 2 square feet, clamp shall be Fee & Mason 255L with locking nut and 255S retaining strap.
4. Welding Studs: Erico Fastening Systems, capacitor discharge, low carbon steel, copper flashed.
5. Structural (carbon) Steel Shapes and Steel Plates: ASTM A36, shop primed.
6. Stainless Steel Shapes and Plates: ASTM A276 and ASTM A666.
7. Machine Bolt Expansion Anchors:
 - a. Non-caulking single unit type: Federal Specification: FS FF-S-325, Group II, Type 2, Class 2, Style 1.
 - b. Non-caulking double unit type: Federal Specification: FS FF-S-325, Group II, Type 2, Class 2, Style 2.
8. Duct Sealant: Non-hardening, non-migrating mastic or liquid elastic sealant, type applicable for fabrication/installation detail, as compounded and recommended by manufacturer specifically for sealing joints and seams in ductwork.
 - a. All adhesives and sealants used on the construction of ductwork shall comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168; VOC limits shall comply with the limits indicated in Table 1 of LEED Version 2.2, Indoor Environmental Quality Section, Credit EQ-4.1. Those limits correspond to an effective date of the SCAQMD Rule #1168 of July 1, 2005, and Rule Amendment date of January 7, 2005.
9. If any fiberglass duct lining is used, it shall be covered with a matte-faced neoprene covering and sealed with an acrylic polymer. Surface burning characteristics shall have a flame spread index less than 25 and smoke developed index less than

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50 per ASTM E84. Lining shall be secured with pins or mechanical fasteners. Lining that is secured with adhesive only is not acceptable. The fiberglass lining shall not support fungi or bacterial growth as per ASTM C1338, ASTM G21 and ASTM G22. Fiberglass lining shall conform to the erosion test method described in UL Publication No. 181. Fiberglass lining density shall be 1-1/2 lbs. per cubic foot, minimum of 1", unless otherwise indicated on the Drawings.

The duct lining shall have the following minimum R values:

Thickness (in)	R Value (hrft ² °F/BTU)
1	4.3
1.5	6.3
2	8.7

The minimum duct lining sound absorption coefficients shall be as follows:

Thickness (in.)	NRC
1	.75
1.5	.90
2	1.00

Approved manufacturers:

Owens Corning Aeroflex
Johns Manville Permacote Linacoustic
Certainteed Ultralite
Or approved equal

Duct liner may also be a non-erosive, open cell, fiber-free, polyimide foam material. Foam maximum thermal conductivity shall be .35 BTU/inhrft²degF. Foam surface burning characteristics shall have a flame spread index less than 25 and smoke developed index less than 50 per ASTM E84. The foam lining shall conform to the erosion test method described in UL Publication No. 181. The foam lining shall not support fungi or bacterial growth as per ASTM C1338, ASTM G21 and ASTM G22. Foam lining shall be coated with an acrylic polymer. Foam sound absorption coefficient shall be a minimum of .65 NRC for 1" lining and .80 NRC for 1-1/2" lining. The foam lining shall be Johns Manville Polycoustic or approved equal for use as a thermal/acoustical liner for metal duct systems.

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All adhesives and sealants used on the fabrication/installation of internal acoustical lining shall comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168; VOC limits shall comply with the limits indicated in Table 1 of LEED Version 2.2, Indoor Environmental Quality Section, Credit EQ-4.1. Those limits correspond to an effective date of the SCAQMD Rule #1168 of July 1, 2005, and Rule Amendment date of January 7, 2005.

2.02 FABRICATION - GENERAL

Fabricate ductwork from galvanized sheet metal of the gages specified in SMACNA HVAC Duct Construction Standards Third Edition - 2005

PART 3 - EXECUTION

3.01 SUPPLEMENTAL INSTALLATION

- A. Provide necessary transformation pieces, and flexible fabric connections (Refer to Section 233300: Duct Accessories) for ductwork connected to air handling units or air inlet and outlet devices.
- B. Field Fabrication: Complete fabrication of work at project as necessary to match shop-fabricated or factory-fabricated work to accommodate installation requirements.
- C. Where the corner of an angle iron brace or joint member projects into a walking passage, the corner shall be mitered and shall be padded with 1/2" minimum thickness flexible foamed plastic material to minimize the possibility of injury to personnel.

3.02 INSTALLATION OF DUCT LINER

- A. All adhesives and sealants used on the fabrication/installation of internal acoustical lining shall comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168; VOC limits shall comply with the limits indicated in Table 1 of LEED Version 2.2, Indoor Environmental Quality Section, Credit EQ-4.1. Those limits correspond to an effective date of the SCAQMD Rule #1168 of July 1, 2005, and Rule Amendment date of January 7, 2005.
- B. Dimensions of lined ducts indicated on the Drawings are the inside dimensions of the duct after the liner has been installed. The duct dimensions shall be increased as necessary to compensate for liner thickness.

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- C. Install as per SMACNA HVAC Duct Construction Standards, Metal and Flexible, Third Edition, 2005. Include metal nosing, etc. as required.

3.03 HANGER ATTACHMENTS

Reference: SMACNA HVAC Duct Construction Standards, Third Edition-2005 Figures 4-1,4-2,4-3.

A. General

1. Secure upper hanger attachments to structural steel or steel bar joists wherever possible.
2. Do not attach hangers to steel decks.
3. Metallic fasteners installed with electrically operated or powder driven tools may be used as hanger attachments in accordance with the SMACNA HVAC Duct Construction Standards, Third Edition-2005.

B. Attachment to Steel Frame Construction: Provide intermediate structural steel members where required by ductwork support spacing. Select steel members for use as intermediate supports based on a minimum safety factor of 5.

1. Secure upper hanger attachments to steel bar joists at panel point of joists.
2. Do not drill holes in main structural steel members.

C. Attachment to Cast In Place Concrete:

1. Secure hangers to overhead construction with self-drilling type expansion anchors and machine bolts.
2. Secure hanger attachments required to be supported from wall or floor construction with single unit expansion anchors or self-drilling type expansion anchors and machine bolts.

3.07 HANGERS FOR DUCTS, 2 INCHES W.G. AND UNDER

- A. Install hangers for ducts as specified in the SMACNA HVAC Duct Construction Standards, Third Edition-2005
- B. Prime coat plain steel rods threaded at the site immediately after installation as per Section 099000: Painting. Galvanized rods shall not be primed.

3.08 HANGERS FOR DUCTS OVER 2 INCHES W.G.

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- A. Install trapeze hangers for ducts as specified in the SMACNA HVAC Duct Construction Standards Third Edition-2005, Strap hangers shall not be used in this application.

3.09 DUCT RISER SUPPORTS

- A. Support vertical round ducts and vertical rectangular ducts as per SMACNA HVAC Duct Construction Standards, Third Edition-2005.

3.10 CONNECTIONS

- A. General Contractor shall arrange to have the connections of metal ductwork to equipment and shall provide flexible connection for each ductwork connection to equipment mounted on vibration isolators, and/or equipment containing rotating machinery. (Refer to Section 15910: Duct Accessories for flexible connectors).
- B. Coordinate as necessary to ensure that access doors have been provided in hung ceilings and any other required places for proper operation and maintenance.

3.11 ADJUSTING AND CLEANING FOR START UP AND WARRANTY

- A. Clean dust and debris out of ductwork internally, unit by unit, as units are installed. Clean external surfaces of foreign substances that might cause corrosive deterioration of metal. Clean external surface where ductwork is to be painted that might interfere with painting or cause paint deterioration.
- B. Paint the required duct as per Section 230501: Basic HVAC Requirements.
- C. Balancing: Refer to Section 230594: Balancing of Systems for air distribution balancing of metal ductwork. Seal any leaks in ductwork that become apparent during the balancing procedure.

END OF SECTION

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SECTION 233313
DAMPERS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide dampers specified herein, shown on the Drawings, needed for a complete and proper installation. Dampers provided as part of factory-fabricated equipment are specified as part of the equipment assembly in their respective sections. Product specific requirements are contained herein; 230501, Basic Heating, Ventilating and Air Conditioning Requirements, shall be referred to for general requirements.

1.02 RELATED SECTIONS

- A. Division 23 Sections
B. Division 26 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Product Data: Submit manufacturer's product data and shop fabricated drawings. Submit charts indicating free area for flow through damper. Submit lab testing results indicating pressure drop through the dampers.
- B. Shop Drawings
1. Submit manufacturer's assembly-type shop drawings for each type of damper showing interfacing requirements with ductwork, method of fastening or support, and methods of assembly of components. Submit MEA numbers with the Shop Drawings.
 2. Fire dampers, smoke dampers and combination fire smoke dampers shall be listed and bear the label of an approved testing agency per MC 607.3.
 3. Submit fire, smoke and combination fire smoke damper installation details including sleeves and duct-mounted access doors and panels. Verify conformance with UL 555-1999, UL555S-1999 and New York City Construction and Electrical Codes. UL Classified label shall be indicated on the installation instructions. The UL listing shall be indicated on the Shop Drawings, and permanently labeled on equipment.
- C. Certification: Manufacturer's UL installation affidavit for all fire, smoke and combination fire smoke dampers.
- D. Maintenance materials (extra fusible links)

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E. Maintenance data (spare parts lists and maintenance manuals)

1.04 SUPPLEMENTAL QUALITY ASSURANCE

A. Codes and Standards

1. SMACNA Compliance: Comply with applicable portions of SMACNA: HVAC Duct Construction Standards, Metal and Flexible, 2005 edition or later, and Fire, Smoke & Radiation Damper Installation Guide for HVAC Systems - Latest Edition.
2. UL Compliance: Construct, test, and label fire dampers smoke dampers and combination fire/smoke dampers in accordance with the 1999 editions of UL Standard 555 and UL Standard 555S.
3. All appliances regulated by the New York City Construction Codes shall be listed and labeled (reference MC 301.4, MC 301.6). Testing of material and equipment shall be in accordance with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department (MEA) before the effective date of the NYC Construction Codes may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.
4. Per NYC Mechanical Code MC 513.10, equipment utilized in Smoke Control systems such as automatic dampers and balance dampers shall be suitable for their intended use, suitable for the probable exposure temperatures and shall be as approved by the Commissioner. Components shall be suitable for the probable temperature rise to which the components will be exposed. This temperature rise is as Per MC 513.10.4, automatic dampers, regardless of the purpose for which they are installed within the smoke control system, shall be listed and conform to the requirements of approved recognized standards. Per BC 909.5.2.1, ducts and air transfer openings are required to be

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protected with a minimum Class II, 250°F smoke damper complying with BC 716 when used as part of smoke control systems.

1.05 ATTIC STOCK

- A. Furnish extra fusible links to the Commissioner, one link for every 10 installed at each temperature range. Obtain receipt.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Subject to compliance with requirements, provide shop fabricated dampers or from one of the following manufacturers:

Air Balance, Inc.
Ruskin Mfg.
Greenheck Fan Corp.
Approved equal.

- B. Subject to compliance with requirements, provide fire dampers from one of the following manufacturers:

Ruskin Mfg.
Greenheck Fan Corp.
Pottorff, Div. of PCI Industries
Approved equal.

2.02 VOLUME DAMPERS

- A. Opposed Blade Dampers: Opposed blade type frames of all welded construction utilizing channel iron members in galvanized steel ducts; extruded members in aluminum ducts and stainless steel in stainless steel ducts. Fabricate frames in accordance with SMACNA HVAC Duct Construction Standards, 2005 or Latest Edition. Fabricate blades from No. 18 gage (minimum) metal of same material as duct. Single blade dampers are unacceptable for ducts over 11" in height. Blades shall be connected by a common linkage. Manual operated dampers shall have a quadrant locking device. Weld motor mounting bracket to damper frame for pneumatic or electric motor operated dampers.
- B. Parallel Blade Dampers (Ref. SMACNA HVAC Duct Construction Standards, 2005 or Latest Edition): Provide metal frames of all welded construction, utilizing channel iron members in steel ducts and extruded aluminum members in aluminum ducts. Fabricate blades from No. 18 gage (minimum) metal, of same

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material as duct. Single blade dampers are unacceptable for ducts over 11" in height. Blades shall be connected by a common linkage. Weld motor mounting bracket to damper frame for pneumatic or electric motor operated dampers. Shop coat raw ferrous parts of damper assemblies with corrosion resistant paint.

- C. Splitter dampers shall not be used. Volume control in duct branches shall be by volume dampers.
- D. Manual Damper Regulators (Ref. SMACNA HVAC Duct Construction Standards, 2005 or Latest Edition)
 - 1. For Dampers Installed in Exposed or Accessible Concealed Ductwork: Indicating quadrant with heavy metal handle and means for locking damper in all positions.
 - 2. For Dampers Installed in Inaccessible Concealed Ductwork: Concealed type with indicating regulator in cast metal box with cover plate. Provide assembly complete with duct and bearing, adjustment coupling, damper extension rods and minimum of 2 keys or socket wrenches for each type of damper adjustment screw or device.
- E. Dampers in aluminum ducts shall be aluminum, in stainless ducts, stainless steel. Fabricate blades of same material as duct in which the dampers are installed.
- F. All outdoor intake dampers and exhaust air discharge dampers terminating at an exterior louver or located outdoors shall be opposed blade low leakage type; less than 10 CFM per square foot at 2" across the damper. Include leakage test certifications with the shop drawing submission for all such dampers.
- G. All modulating dampers shall be the opposed-blade type; all two-position dampers shall be parallel-blade type. Dampers in galvanized sheet metal shall be made of galvanized sheet steel; blades shall not be more than 6" in width.

2.03 MULTI-BLADE DAMPERS AND CONTROLS (FIELD PROVIDED DAMPERS)

A. General

- 1. Self-acting or electric motor dampers used in the inlet to roof type exhaust fans shall be provided by the fan manufacturers.

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- B. Construction of Multiblade Dampers (Ref. SMACNA HVAC Duct Construction Standards, 2005 or Latest Edition)
1. Frames: Frames shall be braced for rigid reinforcement. Frames shall be provided with bolt holes for mounting and with stationary stops on the four sides to prevent air leakage. Outside air intake damper frames shall be provided with drilled lugs on two sides in a lower corner, so that motor mounting bracket can be securely bolted to frame.
 2. Blades: Damper blades shall be not wider than 9", shall have formed interlocking edges, and shall have a 1/2" deep "V" pressed in the center to stiffen the blades. Blade axles, axle clamps and blade connecting lugs shall be of non-ferrous metal. Blades shall be linked firmly together so that all blades work in unison. The lower blade shall be provided with a linkage connection lug for motor operation of the damper. Open position of the blades shall be limited to 90°. Damper blades for fan systems shall be not lighter than No. 18 gage galvanized sheet steel. Unless shown otherwise on the Drawings, damper blades for supply systems used in modulating type dampers, shall be of the opposed blade type. Outside Air Intake (OAI) shall have opposed blades. Damper blades for outside air intake shall be not lighter than No. 14 gage aluminum.
 3. Bearings: Bearings on blade pivot points shall be fitted with stainless steel or non-ferrous metal sleeve (or ferrule type) pressed into damper frame. Bearings shall be accurately sized to fit blade axles, and shall provide smooth operation.
 4. Linkage: Linkage or tie rod to interconnect blades shall be 1/4" diameter (minimum) galvanized steel or non-ferrous metal and shall be secured to the blade lugs by means of cotter pins and washers.
- C. Painting: Black iron damper frames and blades shall be given one coat of finish black paint over a prime coat. Galvanized steel damper blades and frames shall not be primed or painted. Painting shall be done at the shop.
- D. Control for Multi-blade Dampers: Refer to the Temperature Control System Sections for control of the multi-blade dampers. Outside air dampers shall be automatically controlled by means of damper actuators as specified below.

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2.04 DAMPER ACTUATORS

- A. Damper actuators shall be furnished by Temperature Control Contractor (TCC) when not provided as part of the factory assembly of the air handlers or rooftop units. TCC to coordinate with Mechanical Contractor (MC) and General Contractor (GC)

Manufacturers:

Belimo Aircontrols (USA) Inc.
Siemens Building Technologies, Inc. - Talon Controls,
(formerly by Staefa Control Systems),
Approved equal.

- B. Operation: When motor is energized, damper shall open; when non-energized, damper shall close or return to a pre-set position.
- C. Actuators (Electronic) shall be as defined in Section 15970, Temperature Control System (LonWorks DDC). Pneumatic actuators shall be as defined in Section 15972.

2.05 FIRE DAMPERS

- A. Provide 1-1/2 hour or 3 hour-fire rated damper (as required in MC Table 607.3.1 of the NYC Mechanical Code, listed under UL Standard 555-1999 of types and sizes indicated on the Drawings. Construct casings of galvanized steel. Provide fusible link rated at 50°F over the maximum temperature that is normally encountered when the system is in operation or shut down, but not less than 160°F (reference MC 607.3.1.1.1). Per MC 607.3.1.1.2, the fire damper operating temperature shall not be more than 286°F where located in a smoke control system complying with MC 513. Provide damper with positive lock in closed position. Blade Material: Steel, match casing.
- B. Each fire damper shall be supplied with factory fabricated steel sleeves and retaining angles as per SMACNA: Fire, Smoke & Radiation Damper Installation Guide for HVAC Systems - 2005 or Latest Edition and in accordance with the manufacturers' UL approved installation. Gauge of sleeve shall be at least equal to gauge of duct when one or more of the following duct sleeve connections are used: plain S slip, hemmed S slip, standing S slip, reinforced standing S slip, inside slip joint, or double S slip and other UL/SMACNA approved breakaway connections. If any other duct sleeve connections are used other than UL breakaway connections, the sleeve shall be minimum 16 gauge for dampers up to 36" wide X 24" high and 14

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gauge if width exceeds 36" or height exceeds 24. Fire damper shall have UL labels affixed to them.

- C. All fire dampers (used in purge and non-purge systems that utilize an electric temperature sensing device or resettable bimetallic link in lieu of a fusible element) shall be provided with two factory end switches, one set to close when the damper blades are at their open position, and the other set to close when the damper blades are at their closed position. Switches shall be physically linked to the damper blade.

2.06 COMBINATION FIRE SMOKE DAMPERS

- A. Provide at locations shown on the Drawings or as described in schedules, combination fire/smoke dampers meeting or exceeding the following specifications. Each combination fire/smoke damper shall be 1-1/2 hour or 3-hour fire rated under UL Standard 555-1999 and as required in MC Table 607.3.1 and shall further be classified by UL 555S-1999 as a minimum leakage Class II rated damper per MC 607.3.2. Elevated smoke temperature ratings shall not be less than 250°F per MC 607.3.2 (however the post fire purge dampers shall trip at the temperatures defined above in Article 2.06.A). Damper manufacturer shall have tested, and qualified with UL, a complete range of damper sizes covering all dampers required by this specification; having a single damper size tested and UL qualified is not acceptable. Provide access door in ducts within 6" of combination fire smoke dampers. Dampers that are not used as part of a smoke control or purge system may be static rated dampers. Dampers must operate 3 cycles at ambient temperature. Dampers must close and open within 75 seconds after 15-minute exposure to minimum 250°F elevated temperature at a "testing" airflow of 2400 fpm, 4.5 inches wc. Dampers shall "rated" at 2,000 fpm at 4.0" wc. Dampers shall include and bear a UL label in accordance with established UL labeling procedures.
- B. Combination fire smoke damper shall be qualified under UL555S-1999 to an elevated temperature of 350° F maximum temperature degradation. Appropriate electric operators shall be installed by the damper manufacturer at the time of damper fabrication; damper and operator shall be supplied as a single entity which meets all applicable UL555S qualifications for both dampers and operators.
- C. Each combination fire smoke damper shall be supplied with factory furnished heavy gage steel sleeves and mounting angles as per SMACNA: Fire, Smoke & Radiation

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Damper Installation Guide for HVAC Systems - 2005 Edition or latest (with electric motor) and in accordance with manufacturer's UL 555-1999 and 555S-1999 listing. Gage of sleeve shall be at least equal to gage of duct when one or more of the following duct sleeve connections are used: plain S slip, hemmed S slip, standing S slip, reinforced standing S slip, inside slip joint, double S slip and other UL/SMACNA approved breakaway connections. If any other duct sleeve connections are used other than UL breakaway connections, the sleeve shall be min. 16 gage for dampers up to 36" w x 24"h and 14 gage if width exceeds 36" or height exceeds 24".

- D. All combination fire/smoke dampers shall be provided with two factory end switches, one set to close when the damper blades are at their open position, and the other set to close when the damper blades are at their closed position. Switches shall be physically linked to the damper blade. Factory end switches shall be utilized by the Div 16 fire alarm system (reference Section 16720, Fire Detection and Alarm System) to provide open/closed indication on an addressable basis. Combination fire smoke damper shall have UL labels affixed to them. Fire/smoke dampers that utilize an electric temperature sensing device or resettable bimetallic link in lieu of a fusible element that are not used as part of a smoke control system or post fire smoke purge system shall be manually reset by local pushbutton switch after being subjected to elevated temperatures.
- E. Fire/Smoke dampers that are used as part of a smoke control system or post fire purge system shall have the ability to be manually overridden (re-opened) from the remote command station at the smoke purge panel after being subjected to elevated temperatures unless the maximum degradation temperature has been exceeded. All factory end switches shall be utilized by the Div 26 fire alarm system to provide open/closed indication on an addressable basis. Smoke control and purge dampers shall be dynamically rated.
- F. Where combination fire/smoke dampers are located within air ducts that are part of a smoke control system per MC 513, fusible links or other approved heat responsive devices shall have a temperature rating approximately 50 °F above the maximum smoke control system designed operating temperature but shall not exceed UL 555S-1999 degradation test temperature rating of the combination fire/smoke damper or a maximum of 350 °F (reference MC 607.3.1.1.3).

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2.07 AUTOMATIC DAMPERS

- A. Install automatic dampers as indicated on the Drawings and as specified in Section 230923: Temperature Control System- DDC.

2.08 SMOKE DAMPERS

- A. Provide smoke dampers in types and sizes indicated on the Drawings, with casing constructed of galvanized steel, stainless steel jamb gasket to provide a minimum Class II fire retardant smoke seal (per MC 607.3.2), and stainless steel negator spring to assure positive closing when mounted in either vertical or horizontal position. Elevated smoke temperature ratings shall not be less than 250°F per MC 607.3.2. The damper shall close upon signal from the fire panel. Damper operators shall be electric motors equipped with instant closure clutch, linkage and motor mounting brackets. As part of the UL qualification, smoke dampers shall operate (to open and close) under HVAC system operating conditions, with "testing" pressures of at least 4.5" W.G. in the closed position, and 2400 fpm air velocity in the open position. Dampers shall be "rated" at 2,000 fpm at 4.0" wc. Damper shall have the motor mounted outside the air stream. Smoke damper shall have UL labels affixed to them.
- B. All smoke dampers shall be provided with two factory end switches, one set to close when the damper blades are at their open position, and the other set to close when the damper blades are at their closed position. Switches shall be physically linked to the damper blade. Factory end switches shall be utilized by the Div 28 fire alarm system (reference Section 283101, Fire Detection and Alarm System) to provide open/closed indication on an addressable basis.

2.09 BACK-DRAFT (RELIEF) DAMPERS

- A. Product Description: Multi-Blade, back-draft dampers: Parallel-action, gravity-balanced, Galvanized 16 gage thick steel or extruded aluminum. Blades, maximum 3 inch width, center pivoted, with felt or flexible vinyl sealed edges. Blades linked together in rattle-free manner with 90-degree stop, steel ball bearings, and plated steel pivot pin. Furnish dampers with adjustment device to permit setting for varying differential static pressure.

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PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install damper in accordance with damper manufacturer's recommendations and all applicable codes.
- B. Install access doors and fire rated access door as required.
- C. Coordinate with other work, including ductwork, as necessary to interface installation of damper properly with other work.
- D. Provide a neoprene gasket, 1/4" thick, full width of flange, wherever a galvanized duct connects to aluminum outside air intake.

3.02 INSTALLATION OF FIRE DAMPERS, SMOKE DAMPERS, AND COMBINATION FIRE/SMOKE DAMPERS

- A. All fire dampers shall be installed in ducts in the fire rated partitions, walls, floors, roof and where indicated on the Drawings
- B. All fire dampers shall be installed as per SMACNA: Fire, Smoke & Radiation Damper Installation Guide for HVAC Systems - Latest Edition and/or manufacturers' UL Classified instructions. Contractor shall obtain an affidavit from the manufacturer certifying that the UL Classified installation was adhered to. Contractor shall submit this affidavit to the Commissioner.
- C. Connection of duct to fire dampers and fire dampers sleeve shall be made in accordance with damper manufacturer's recommendations and all applicable codes.
- D. In the smoke control and post fire smoke purge systems, fire and smoke damper combination shall have remote override capability as approved by UL. The electrical contractor shall provide the control wiring of the override system.

3.03 INSTALLATION OF VOLUME DAMPERS

- A. Provide all dampers required for all systems to accomplish the intent of the Drawings. Dampers are to be installed in frames properly caulked to prevent leakage.
- B. Provide manual balancing dampers as required to properly balance the air distribution system. If

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location of balancing dampers is not defined on the drawings, the following minimum standard shall govern:

1. All supply air main branches from trunk and all sub-branches from main shall have balancing dampers.
 2. Exhaust and return main branches from trunk and all sub-branches from mains shall have balancing dampers. Balancing dampers shall not be installed in kitchen exhaust, fume hood exhaust, or breeching unless otherwise indicated.
 3. Locate dampers as far as possible from air outlet to avoid noise transmission.
 4. Install with easy access to damper, or otherwise provide remote damper actuator.
- C. Single blade dampers shall not be used for balancing unless otherwise shown.

3.03 FIELD QUALITY CONTROL

- A. Operate damper to demonstrate compliance with requirements. Test for air leakage while system is operating. Repair or replace faulty components, as required to obtain proper operation.

3.04 ADJUSTING AND CLEANING

- A. Adjusting: Adjust damper for proper settings, install fusible links in fire dampers and adjust for proper action.
- B. Label access doors.
- C. Final positioning of manual dampers is specified in Section 230594: Balancing of Systems.
- D. Cleaning: Clean factory-finished surfaces. Repair any marred or scratched surfaces with manufacturer's touch-up paint.

END OF SECTION

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SECTION 233400
CENTRIFUGAL FANS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide centrifugal fans called for in the drawing schedule and as needed for a complete and proper installation. The types of centrifugal fans specified herein are: Utility Fans, Roof Type Exhaust Fans and Inline Centrifugal Fans. Product specific requirements are contained herein; Section 230501, Basic HVAC Requirements, shall be referred to for general requirements.

1.02 RELATED SECTIONS

- A. Division 23 Sections
B. Division 26 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Product Data: Submit manufacturer's product data for centrifugal fans, including specifications, capacity ratings, fan performance curves with operating point clearly indicated, and certified fan sound-power ratings.
- B. Wiring Diagrams: Submit manufacturer's electrical requirements for power supply wiring to fan units. Clearly differentiate between portions of wiring that are factory installed and portions to be field-installed.
- C. Maintenance data.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

- A. All centrifugal fans required under this Section shall be the product of a single manufacturer.
- B. Codes and Standards
1. AMCA Compliance: Provide centrifugal fans bearing the AMCA Certified Ratings Seal. Sound rate centrifugal fans in accordance with AMCA 300.
 2. ASHRAE Compliance: Test and rate centrifugal fans in accordance with ASHRAE 51 (AMCA 210):
 3. UL Compliance: Provide centrifugal fan electrical components that have been listed and labeled by UL. Roof type exhaust fan shall be tested in accordance with UL 705.

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4. NEMA Compliance: Provide motors and electrical accessories complying with NEMA standards.
5. All appliances regulated by the New York City Construction Codes shall be listed and labeled (reference MC 301.4, MC 301.6). Testing of material and equipment shall be in accordance with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department (MEA) before the effective date of the NYC Construction Codes may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.
6. All work shall be in accordance with the NYC Construction Codes and NYC Electrical Code.

1.05 SUPPLEMENTAL DELIVERY, STORAGE, AND HANDLING

- A. Deliver centrifugal fans with factory-installed shipping skids and lifting lugs; pack components in factory-fabricated protective containers.

1.06 SITE CONDITIONS

- A. Examine the Drawings, visit the site, and take measurements to make sure that the equipment will fit in the spaces allocated.

1.07 COORDINATION

- A. Coordinate installation of equipment supports.

PART 2 - PRODUCTS

2.01 FANS

A. General

1. Fans shall be of type, capacity, discharge location, and rotation shown on the Drawings and constructed for Class 1 operating limits, unless otherwise indicated. Fans shall be guaranteed not to overload the motor under any condition.
2. Select fans for the air quantities and static pressure indicated on the Drawings, of size and speed so as to

allow for a change in volume, without operating in an unstable range.

2.02 UTILITY FANS

- A. Provide utility fans of sizes and arrangement as indicated and of capacities and having accessories as scheduled and where shown on the Drawings.
- B. Fan Units: Provide factory-assembled and tested fan units consisting of housing, wheel, fan shaft, bearings, and fan drive. Clean condition and prime paint sheet metal parts prior to final assembly. Apply final coat of enamel to exterior surfaces after assembly.
- C. Housings: Construct of heavy-gauge steel with side sheets fastened to scroll sheets by means of deep lock seam. Provide round inlet collar slip joint discharge duct connection. Construct housings to be convertible to 8 standard discharges. Provide adjustable motor supports.
- D. Wheels: Provide forward curved or backward inclined wheels as scheduled. Provide swaged hubs. Balance wheels statically and dynamically.
- E. Shafts: Construct of ground and polished steel. Apply rust preventive coating.
- F. Bearings: Provide self-aligning, grease-lubricated, pillow block type bearings, selected for minimum average life (AFBMA L-50) of 200,000 hours.
- G. Motors: Provide open drip-proof high energy efficient motors with ball or sleeve bearings. Provide split phase or capacitor start motors for fractional horsepower, with resilient base. Provide induction motors for integral horsepower, with rigid base.
- H. Drive: If "Belt Drive" fans are specified on the schedules, provide multiple matched V-belt drive with minimum 1.4 times rated motor horsepower. Provide adjustable pitch sheave on motor shaft, selected for midpoint at design conditions. If "Direct Drive" fans are specified on the schedules, provide a totally enclosed motor with sealed bearing lubrication.
- I. Vibration Control: Provide as specified in Section 230549: Vibration Isolation.
- J. Accessories: Provide the following accessories as indicated and/or scheduled on the Drawings:
 - 1. Dampers: per ASHRAE 90.1-2004 Article 6.4.3.4.3, systems shall be equipped with motorized dampers that will automatically shut when the systems or spaces served are not in use. Gravity (non-motorized) dampers are acceptable in buildings less than three stories in

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height. Gravity (non-motorized) dampers are acceptable in systems with a design exhaust capacity of 300 cfm or less. Provide fans with the damper types as shown on the Drawings.

2. Access Doors: Provide gasketed access door, with latch-type handles, in fan housing.
3. Scroll Dampers: Provide single blade damper at top of fan scroll, with linkage adjustable and locked to fan housing.
4. Inlet Screens: Provide removable heavy wire mesh inlet screens on fan inlets.
5. Drain Connections: Provide 3/4" threaded coupling drain connection at lowest point of housing.
6. Weather Hoods: Provide protective weather hoods with stamped vents over motor and drive compartment.

K. Approved Manufacturers

Loren Cook Co.
PennBarry
Twin City Fan & Blower
Or approved equal

2.03 INLINE CENTRIFUGAL FANS

- A. Provide inline centrifugal fans of sizes and arrangement as indicated and of capacities and having accessories as scheduled and where shown on the Drawings.
- B. Housing: Aluminum split or heavy gauge galvanized steel housing. Square design shall include square duct mounting collars and support bracket and removable panels for access to the motor compartment on direct drive models and access to the shaft and bearing compartment on belt drive models.
- C. Direct-Drive Units: Provide ball bearing motor encased in housing out of the air stream. Provide factory wiring to disconnect located outside of fan housing.
- D. Belt-Drive Units: Provide ball bearing motor mounted on adjustable base, with adjustable sheaves. Provide enclosure around belts. Provide lubricating tubes from fan bearings to outside of fan housing.
- E. Motors shall be permanently lubricated, heavy duty ball bearing type to match with the fan load and pre-wired to the specific voltage and phase.
- F. Wheel: Provide aluminum airfoil blades on aluminum hub.

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- G. Vibration Control: Provide as specified on Section 230549: Vibration Isolation.
- H. Accessories: Provide the following accessories as indicated and/or scheduled on the Drawings:
1. Volume Control Damper: Provide manual controlled volume damper in fan outlet with quadrant and lock.
 2. Companion Flanges: Provide matching flanges on inlet and outlet to connect ductwork to fan.
 3. Fan Guards: Provide guards on inlets and outlets not connected to ductwork, constructed of expanded metal in removable frame.
 4. Speed Control: For direct drive fans, provide variable speed switch with off-on control, and speed control for 100% to 50% of fan air delivery.

H. Approved Manufacturers

Greenheck Fan Corp.
PennBarry
Loren Cook Co.
Or approved equal

2.04 ROOF TYPE EXHAUST FANS

- A. Roof type exhaust fans shall be of the power roof ventilator type complete with motor, frame, housing, and all other items and accessories. The fan wheel shall be aluminum. All other parts of the fan with which the air stream comes in contact shall be aluminum, stainless steel or reinforced fiberglass polyester plastic. The use of a heavy gage steel motor support plate protected with a baked enamel finish may be accepted.
- B. Fan Unit
1. The fan shall be capable of exhausting the cubic feet of air per minute with the static pressure, minimum wheel diameter and speed shown on the Drawings. After assembly of motor and wheel, the rotating parts shall be statically and dynamically balanced at rated speed to provide vibration free operation.
 2. The fan shall be quiet operating, backward curved centrifugal non-overload type, provided with approved type belt drive. Direct-connected fans shall be furnished only when indicated on the Drawings. Fan drives shall be sized in accordance with the manufacturer's recommendations. Belts shall be selected for at least 50% excess motor horsepower. Motor shall have an adjustable pitch driving sheave and shall be separated from the air stream. The motor shall be of size and characteristics noted on the

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Drawings with a terminal box. Wheel and motor support assembly shall be of heavy gage aluminum, galvanized steel, or steel which has been thoroughly coated with a corrosion resisting paint. Fan and motor shall be supported on vibration isolation mounts. The fan shall be provided with an inlet ring or core.

3. The frame of the unit shall be made of aluminum or stainless steel of suitable thickness to insure structural integrity of the unit. The entire unit shall be designed to provide for easy removal of the fan, motor, and all other items and accessories without disturbing the balance of the unit.
- C. Housing: The fan unit shall be provided with a closed weatherproof housing of one of the types indicated below. Hardware, screws, and all other items and accessories used in the construction of the fan housing shall be of stainless steel or non-ferrous material. Housing shall be provided with 1 brass or cadmium plated padlock where the hood is hinged, or 2 padlocks where the hood is removable. Housing shall be of such design as to form a uniform passage for air all around the rim. The air discharge openings shall be provided with wire mesh screens of 1/2" mesh, No. 16 gage copper, bronze, aluminum or PVC encapsulated bird guard with brass or aluminum screws. Screens shall be securely fastened in place with aluminum, brass or stainless steel fasteners. Where the fan design includes an integral wiring conduit, it shall be large enough to permit passage of a 3/4" conduit through it. Where an integral wiring conduit is not included, openings for the passage of 3/4" conduit (for service wiring) from base of fan into motor compartment shall be provided by the fan manufacturer. Low silhouette type housings are not acceptable. Approved type housings are:
1. Spun Aluminum: This type housing shall be fabricated from not less than No. 14 gage aluminum in wheel sizes less than No. 30.
 2. Reinforced plastic: This type housing shall be dome-shaped, molded and bonded reinforced fiberglass polyester plastic. Sizes, less than No. 21 shall have the housing made from not less than 3/32" thick plastic. Fan size No. 21 and larger shall be of greater thickness but not less than 1/8".
- D. Thermal Overload Protection: Provide starter with thermal overload protection and pilot light for each roof exhaust fan.
- E. Disconnecting Switch: Each roof type exhauster with 2-horsepower or smaller motor shall be provided with a disconnecting switch in general purpose enclosure mounted inside of the housing near the motor. Wiring between motor and switch shall be installed by the fan

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manufacturer in 1/2" (minimum size) Greenfield conduit. Disconnect switch shall be positioned in a location easily accessible for field connection of service wiring. Conduit outlet from switch shall be 3/4". Disconnect switches for single phase motors shall be 2-pole, Arrow-Hart No. 6808; for three phase motors, they shall be 3-pole, Arrow-Hart No. 7810.

- F. Dampers: per ASHRAE 90.1-2004 Article 6.4.3.4.3, systems shall be equipped with motorized dampers that will automatically shut when the systems or spaces served are not in use. Gravity (non-motorized) dampers are acceptable in buildings less than three stories in height. Gravity (non-motorized) dampers are acceptable in systems with a design exhaust capacity of 300 cfm or less. Provide fans with the damper types as shown on the Drawings.
- G. Extension for Damper: Every roof exhauster shall have an extension base at least 12" high, except for fans serving as kitchen range hood or warming pantry exhausters. Each 12" extension base shall have an inspection opening with gasket and No. 14 gage aluminum cover plate in one side of the base. Extension bases for fans with motor operated dampers shall have a weather protected access panel, with handle, of ample size to permit removal of damper unit in one side of the extension. Extension base shall be fabricated from not less than No. 14 gage aluminum sheets and shapes and shall form a rigid structural member for the fan and housing mounted upon it. Extension shall fit the roof curb and shall be secured to it with stainless steel lag screws or anchor bolts.
- H. Bearings: Bearings shall be heavy-duty self-aligning ball bearing type either permanently lubricated or equipped with fittings for grease lubrication. In the latter case, a grease gun of the proper type shall be furnished and delivered to the Commissioner.

I. Approved Manufacturers

PennBarry
Cook (Loren) Co.
Twin City Fan & Blower
Or approved equal

2.05 GAS METER ROOM EXHAUST FAN

- A. Provide an explosion proof centrifugal fan in the Gas Meter Room, of the capacity shown on the Drawings.
- B. Housing: Aluminum split housing, constructed of spun aluminum, with aluminum straightening vanes, inlet and outlet flanges, and support bracket adaptable to ceiling mounting.
- C. Direct-Drive Units: Provide ball bearing explosion proof motor encased in housing out of the air stream. Provide

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factory wiring to disconnect located outside of fan housing. All electrical items shall be explosion proof.

- D. Wheel: Wheels shall be sparkproof and non-corroding. Provide aluminum airfoil blades on aluminum hub.
- E. Vibration Control: Provide as specified on Section 230549: Vibration Isolation.
- F. Accessories: Provide companion flanges: matching flanges on inlet and outlet to connect ductwork and inlet grille to fan as shown on the Drawings.
- G. Dampers: per ASHRAE 90.1-2004 Article 6.4.3.4.3, systems shall be equipped with motorized dampers that will automatically shut when the systems or spaces served are not in use. Gravity (non-motorized) dampers are acceptable in buildings less than three stories in height. Gravity (non-motorized) dampers are acceptable in systems with a design exhaust capacity of 300 cfm or less. Provide fans with the damper types as shown on the Drawings.
- H. Approved Manufacturers

Greenheck Fan Corp.
PennBarry
Loren Cook Co.
Or approved equal

PART 3 - EXECUTION

3.01 SUPPLEMENTAL INSTALLATION

- A. Access: Provide access and service space around and over centrifugal fans as indicated, but in no case less than that recommended by manufacturer.
- B. Electrical Wiring: Install electrical devices furnished by manufacturer but not specified to be factory-mounted. Furnish copy of manufacturer's wiring diagram submittal to Electrical. Verify that electrical wiring installation is in accordance with manufacturer's submittal and installation requirements of Division 16. Ensure that rotation is in direction indicated and intended for proper performance. Do not proceed with centrifugal fan start-up until wiring installation is acceptable. Interlock wiring between fan units, and between fans and field-installed control devices. Provide control wiring between field-installed controls, indicating devices, and fan starters.
- C. Coordinate all trades to ensure that the installation of fans is not in conflict with the work performed of other trades.

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- D. Isolation: Set centrifugal fans on vibration isolators and fasten in accordance with manufacturer's installation instructions.
- E. Controls: Provide controls specified in the Temperature Control System Section.
- F. Ductwork Connections: Refer to Ductwork sections. Provide flexible connections on inlet and outlet duct connections.
- G. Roof Curbs: The prefabricated roof curb will enclose the opening of the roof exhaust fan, and be furnished with flashing and with wood sill at the top. The curbs shall be mounted directly to the roof structural surface, then roofed and flashed to the top of the wood nailer for weather tightness. The exhaust fan shall fit properly over the sill and shall be secured to it with stainless steel lag screws. The joint between the fan base and the sill shall be made air tight by means of heavy roofing felt counter flashing material. Minimum height from the bottom of the fan to the finished floor shall be 12".

3.02 FIELD QUALITY CONTROL

- A. Upon completion of installation of centrifugal fans, and after motor has been energized with normal power source, test equipment to demonstrate compliance. Where possible field correct malfunctioning equipment, then retest to demonstrate compliance. Replace equipment that cannot be satisfactorily corrected. The Contractor shall perform necessary Interdisciplinary Tests and Functional Performance Tests according to the manufacturer's procedures.

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SECTION 233616
VARIABLE AIR TERMINALS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide variable air volume (VAV) terminal units as shown on the Drawing schedules, as specified herein and as needed for a complete and proper installation. Product specific requirements are contained herein; Section 230501, shall be referred to for general requirements.

1.02 INDOOR AIR QUALITY (IAQ) REQUIREMENTS DURING CONSTRUCTION

- A. During Construction, the HVAC contractor shall comply with the indoor air quality (IAQ) requirements.

1.03 RELATED SECTIONS

- A. Division 26 Sections

1.04 SUPPLEMENTAL SUBMITTALS

- A. Product Data: Submit manufacturer's product data, including performance data for each variable air volume (VAV) terminal; schedule showing drawing designation, room location, number furnished, model number, size, and accessories; and installation and start-up instructions. Include listing of discharge and inlet ductborne sound power levels and airborne radiated sound power level. Include listing of control air requirements, if applicable.
- B. Shop Drawings: Submit manufacturer's assembly-type Shop Drawings indicating control diagram, dimensions, weight, loadings, required clearances, method of field assembly, components, and location and size of each field connection. Differentiate between manufacturer-installed and field-installed controls.
- C. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved: ceiling suspension assembly members; method of attaching hangers to building structure; size and location of initial access modules for acoustical tile; ceiling-mounted items including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.
- D. Manufacturer's warranty
- E. Submit all the digital video recordings during the training.

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- F. Maintenance data
- G. Certificate: Contractor's start-up and demonstration affidavit

1.05 SUPPLEMENTAL QUALITY ASSURANCE

A. Codes and Standards

- 1. ARI Compliance: Provide variable air volume (VAV) terminals which have been tested and rated in accordance with ARI 880-1998 with September 2002 Addendum: Industry Standard for Air Terminals or latest edition and bear ARI certification seal.
 - 2. All components within the air stream shall conform to the maximum Flame/Smoke Contribution of 25/50 in accordance with ASTM E 84-2001.
- B. All units shall be capable of maintaining their minimum and maximum set points within a maximum of $\pm 10\%$.
 - C. The one-year warranty shall start at Substantial Completion.
 - D. Before submitting any equipment shop drawings for approval, the HVAC Contractor, Automatic Temperature Controls Contractor and the Equipment Vendor and Manufacturer shall coordinate the controls required for the system.

1.06 COORDINATION

- A. Coordinate layout and installation of variable air terminals and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Approved Manufacturers

Carrier Corp.
Titus Products Div.
Trane (The) Co.
Approved equal

2.02 MATERIALS

- A. Factory assembled cataloged certified and tested pre-manufactured units of the sizes and capacities shown on

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the Drawings with a normally open pneumatic operator or LonWorks digital controller and velocity sensor for pressure independent operation. Locate all controllers/motors on the box exterior for ease of adjustment and repair.

- B. All adhesives and sealants used on fabrication of VAV boxes shall comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168; VOC limits shall comply with the limits indicated in Table I of LEED Version 2.2, Indoor Environmental Quality Section, credit EQ-4.1. Those limits correspond to an effective date of the SCAQMD Rule #1168 of July 1, 2005 and Rule Amendment date of January 7, 2005.
- C. Variable Volume, Direct Digital Control:
1. Unit shall consist of primary air valve, radiated noises shroud, and DDC control system. The casing shall be fabricated of 22 gage galvanized steel. Interior surface of unit casing shall be acoustically and thermally lined with 1" non erosive fiber free flexible, open-cell insulation the equal to Johns Manville Polycoustic Duct Liner which conforms to erosion test method described in UL Publication No. 181 and smoke developed and flamespread requirements of MC 604.3. Fiberglass lining is also acceptable (Johns Manville Linacoustic duct liner or approved equal) providing that it is covered with matte facing and sealed with acrylic coating.
 2. The primary air valve shall be a cylindrical flow control device with an integral electric actuator. Valve inlet is die cast aluminum and tapered to fit standard round flexible ductwork. Maximum leak rate is 1% at 4" wg. inlet static pressure. Integral multiple point, averaging flow sensing ring to provide primary air flow measurement within + 10% of unit rated airflow with 1-1/2" diameters of straight duct upstream of unit. Integral flow taps shall be provided on each unit.
 3. Minimum and maximum air volume shall be factory set and field re-adjustable.
 4. Primary Air Volume Controller:
 - a. Automatic averaging CFM sensing tubes at unit inlet.
 - b. Flow chart shall be used for adjustment of maximum and minimum CFM affixed to each unit.
 - c. Schematic Drawings indicating proper hook-up affixed to each unit.

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- d. If pneumatic controller is not used, digital controller shall be native LonWorks.
- 5. Radiated sound levels shall not exceed NC 35 at 1.0" w.g. inlet static pressure. Radiated NC value shall include a 10 dB room attenuation.
- E. The Temperature Control Contractor shall furnish all LonWorks controllers to the VAV box manufacturer for factory installation. Other methods of providing the controllers (example: OEM furnishes and installs native LonWorks controllers or TCC furnishes and field installs native LonWorks controllers) are to be coordinated by the GC, Mechanical Contractor and TCC, Temperature Controls Contractor.
- F. Access: Provide removable panels in casings to permit access to air dampers and other parts requiring service, adjustment or maintenance. If installed in a hung ceiling, provide access door in the ceilings. (Refer to Section 08305: Access Doors).

2.03 VAV TERMINAL UNIT CONTROL POINTS

- A. Temperature Control Contractor shall provide integration of monitoring and alarm functions by providing control points as indicated in Section 230993 and as shown on the control drawings.

PART 3 - EXECUTION

3.01 SUPPLEMENTAL INSTALLATION

- A. Install in accordance with manufacturers written installation instructions and so as to be easily removed for repair or replacement.
- B. Support terminal unit independent of ductwork.
- C. Install terminal units to provide maximum clearance to volume controller.
- D. Provide DDC control wiring between fields installed controls and VAV terminals, and coordinate the terminal controls with the Temperature Control System.
- E. Flexible duct connections at inlet and outlet at terminal box are not permitted unless in plans or specifications for project.
- F. Provide access doors in non-accessible hung ceilings and elsewhere to access those units

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3.02 FIELD QUALITY CONTROL

- A. Upon completion of installation and prior to initial operation, test and demonstrate that VAV terminals, and duct connections to VAV terminals, are leak-tight. The Contractor shall perform necessary Interdisciplinary Tests and Functional Performance Tests according to manufacturer's procedures.

3.03 TRAINING

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel as specified below:
1. Train maintenance personnel on procedures and schedules related to startup and shutdown, troubleshooting, servicing, and preventive maintenance. Contractor shall submit written affidavit indicating that all equipment is operating as designed.

3.04 INTERDISCIPLINARY TESTS AND FUNCTIONAL PERFORMANCE TESTS

- A. Interdisciplinary Pre-Start-Up and Start-Up Tests:

The Contractor shall conduct interdisciplinary pre-start up and start up tests as per the manufacturer's start up procedures. Contractor shall submit signed start up affidavit signed by the factory authorized service representative indicating that all of the manufacturer's pre-start up and start up procedures have been successfully completed.

- B. Functional Performance Tests:

Contractor shall also submit signed functional performance testing affidavit signed by the factory authorized service representative indicating that all of the manufacturer's functional performance tests have been successfully completed.

END OF SECTION

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DESECTION 235100
BREECHING, CHIMNEYS, AND STACKS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide field fabricated single wall metal breeching for non-condensing boilers from point of connection at boiler to existing chimney. Provide stainless steel chimney liner at existing brick chimney. Product specific requirements are contained herein; Section 230501, Basic HVAC Requirements, shall be referred to for general requirements.

1.02 RELATED SECTIONS

- A. Division 23 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Shop Drawings

1. Submit shop drawings showing fabrication and installation details for breeching. Include plans, elevations, sections, details, and attachments. Detail assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, hangers and location and size of each field connection. Shop drawings shall indicate:

- a. Layout of each boiler/breeching.
b. Details of the assembly of the stainless steel liner into the existing chimney.

- B. Certified Sizing Calculations: Manufacturer shall certify venting system sizing calculations.

- C. Quality Control Submittals

1. Certificates: Submit certificates of materials compliance with specified ASTM, UL, and ASHRAE requirements.
2. Certificates: Submit Welder's Qualification Certificates.

- D. New York City Building Department: Submit copy of all approved plan and permits.

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- E. New York City Department of Environmental Protection: Submit copy of Bureau of Air Resources approval of application and plans.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

- A. Welder's Qualifications: All welders shall be certified in accordance with AWS Standard D9.1, Specifications for Welding Sheet Metal.
- B. Codes and Standards
1. NFPA: Comply with NFPA 211: Standard for Chimneys, Fireplaces, Vents and Solid Fuel Burning Appliances.
 2. UL: Comply with applicable portions of UL safety standards; provide products which have been UL listed and labeled.
 3. AWS: Comply with AWS Structural Welding Code for welder's qualifications, welding details, and workmanship standards.
 4. ASHRAE: Comply with the ASHRAE Equipment Handbook, for Chimney, Gas Vent, and Fireplace Systems, material requirements and design criteria.
 5. Comply with the City of New York **Construction Codes** and the State of New York Building Code and any other public authorities having jurisdiction.
 6. Testing of material and equipment shall be in accordance with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department (MEA) before the effective date of the NYC Construction Codes may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.
 7. The installation, alteration, maintenance, design, minimum safety requirements, repair and approval of factory built chimneys, chimney liners, vents and connectors, field built chimneys and connectors and

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utilization of masonry chimneys shall be in accordance with Chapter 5 of the NYC Fuel Gas Code, Chapter 8 of the NYC Mechanical Code and Chapter 21 of the NYC Building Code.

1.05 SUPPLEMENTAL WARRANTY

- A. All warrantees shall use the date of Substantial Completion as the start date.

1.06 SITE CONDITIONS

- A. Should conditions at the site necessitate a change in the arrangement of the breeching from that shown on the previously approved shop drawings, submit for approval a detailed revised shop drawing (to scale) of the proposed change. This drawing shall also indicate the relationship of the breeching to piping, lights, and all other items and accessories.

PART 2 - PRODUCTS

2.01 SINGLE WALL SMOKE BREECHING

- A. Boiler smoke breeching shall be constructed of not lighter than No. 12 gauge black steel sheets with welded seams. Breeching shall be fabricated in sections with 1-1/2" x 1-1/2" x 3/16" steel angles welded to the 12 gauge black steel sheet at the ends of each section (for the purpose of bolting the sections together). Reinforce rectangular breechings that exceed 5' in length with 1-1/2" x 1-1/2" x 1/4" steel angle braces in the center of the sections. Angles shall be welded to the 12 gauge black steel sheet. Provision shall be made for expansion and contraction of breeching at the chimney opening. Fabrication and assembly shall be gas-tight.
1. Provide 1" x 1" x 1/8" steel angles on 3' centers welded to the bottom surface of the breeching, parallel to the section ends, to support the wire lath which is part of the breeching insulation system. The projecting leg of each such angle shall have 1/8" diameter holes punched and drilled on 8" maximum centers.
 2. Provide test openings and means of closing same in each boiler breeching, as required by the Department of Air Resources. Provide a 3" high steel collar to serve as an insulation stop around each test opening. Area enclosed by collar shall be 4" x 4". Where multiple test openings occur close together, a single collar shall be provided, which shall be located 2" from the openings,

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on each side. Collar shall be not higher than No. 16 gage and shall be welded to the breeching.

- B. Accessories and Specialties: Provide accessories and specialties of types and sizes required to comply with breeching requirements including proper connection of equipment:
1. Cleanout Doors: Same gauge as breeching; size, quantity and location as indicated on the Drawings or as outlined in NYC DEP BAR Code. Doors shall have steel or cast iron frames and shall be fitted with hinges and catches.
 2. Expansion Joints in Smoke Breeching: Provide expansion joints in the smoke breeching. Packing shall be made of asbestos free material, Carborundum Co.'s "Fiberfrax Square Braid." or approved equal.
 3. Anchor: Smoke breeching shall be anchored with two 2-1/2" x 2-1/2" x 1/4" structural steel angles fastened from each side (i.e. top and bottom of the breeching) to an overhead beam with expansion bolts. Supporting hangers shall be 3/4" minimum diameter steel rods and shall be placed not more than 8' apart. 2-1/2" X 2-1/2" X 1/4" angles shall not be riveted or welded to breeching in order to allow thermal longitudinal growth. The 2-1/2" X 2-1/2" X 1/4" angles serve as stiffening angles at the supports. Calcium silicate insulation is to be interrupted at the location of the stiffening angles.
 4. Draft Sequence Damper: The multiple opposed blade type damper shall be designed to maintain a constant pressure and shall be suitable for mounting in the breeching between the boiler smoke outlet and chimney inlet. The damper shall have a free cross sectional area at least equal to that of the breeching it is installed in. The damper shall be suitable for operation with flue gas temperatures up to 750°F and shall have opposed action louvers with ball bearings or sintered type 316 stainless steel sleeve bearings mounted on outside damper casing. Damper frame shall be 10 gage steel and damper blades of 10 gage steel with high temperature aluminum paint finish. The damper shall have heat insulating pads between the casing and the bearing. No heat insulating pads shall be required if the dampers are fabricated using the two sintered type 316 stainless steel sleeve bearing per blade. The damper rod shall be welded to the control arm and shall be provided with marking to clearly indicate the damper position. Damper shall be by Energy Cair, Inc. or approved equal.

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- a. Provide an automatic actuator of the linear acting type for each sequence damper located in the boiler smoke breeching. Actuator shall have sufficient power to open and close a damper, equal to a 100-pound weight, continuously without overloading. Motor shall be equipped with safety and limit switches and with permanently lubricated, sealed ball bearings.
- b. Installation position (vertical or horizontal) of actuator shall be in accordance with manufacturer's recommendation. A 1/8" (minimum thickness) heat insulating gasket of non-asbestos material shall be installed between the actuator brackets and the breeching support.
- c. Automatic damper actuator shall be Cleveland Controls, Inc. Model LF-AS-E, Preferred Instruments No. PL-2, or approved equal conforming to the requirements of this Specification and approved by the New York City Board of Standards and Appeals. (Refer to Supplemental Quality Assurance Article 1.05.B.7).
- d. Blade stops shall be provided at top and bottom of damper housing, which shall be formed from not lighter than No. 10-gauge black steel. The damper shall be provided with stops for safe closed position.
- e. Safe closed position of damper shall be understood to mean that the damper blade shafts have been rotated approximately 70° from the fully open position; there shall always be some opening for any vapor that may collect in the combustion chamber between burner cycling, to escape to the chimney.
- f. Provide a reference mark on the damper assembly representing the safe closed position, as described above and verify compliance in the field during start-up testing.

2.02 STAINLESS STEEL CHIMNEY/STACK LINER

- A. Materials: 10 gauge stainless steel Type 304 welded air tight. Angle bracing and stainless steel plates at top and bottom to prevent side sway with free vertical movement. Provide heat resistant fiber gasket for airtight seal.

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- B. Accessories: Provide accessories bearing UL label.
1. Base Section: Provide anchor lugs for securing stack liner to foundation.
 2. Cleanout Section: Provide smoke-tight cleanout section with gasketed and bolt-tightened cleanout doors.
 3. Cleanout Doors: Same gage and material as the liner; size, quantity and location as outlined in NYC DEP BAR Code. Doors shall have steel or cast iron frames and shall be fitted with hinges and catches.
 4. Tee or Wye Section: smoke-tight tee or wye as indicated for gas-fired duct furnaces and hot water breeching connection, with welded joints finished with smooth transition.
- C. Fabrication:
1. Fabricate sections, fittings, and accessories as individual pieces or in combination lengths for field handling.
 2. Provide tumble type of flashing over the brick chimney or top of chase.
 2. Fabricate liner with anchor lugs, cleanout, T-sections, flashing and counterflashing, and provisions for support, expansion, and contraction.
- D. Manufacturers:
- Selkirk Metalbestos
Olympia Chimney Supply
Metal-Fab
Approved equal.

PART 3 - EXECUTION

3.01 SCHEDULE

- A. Boiler (non-condensing) Projects: Boiler Breeching: Breeching shall be single wall construction as specified in Article 2.01 and additionally insulated with 1-1/2" minimum thick calcium silicate.

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- B. Boiler (non-condensing) Projects: Stack For Boiler: Stainless steel liner as specified in Article 2.02 installed in existing chimney.

3.02 SUPPLEMENTAL INSTALLATION

A. Single Wall Boiler Smoke Breeching:

1. Weld steel angles on the breeching in conformance with AWS workmanship standards of AWS D 9.1, Specification for Welding Sheet Metal. Prefabricate as much as possible using factory shop welds. Field welds should to be kept to a minimum.
2. Align breeching accurately at connections, with a smooth internal surface and a 1/8" misalignment tolerance.
3. Support breeching from overhead beams. Stiffening angles at support shall be 2-1/2" x 2-1/2" x 1/4" steel. Supporting hangers shall be 3/4" minimum diameter steel rods and shall be placed not more than 8' apart. Where, because of location of the breeching relative to overhead beams and field conditions, auxiliary steel is required for the support of the breeching, such auxiliary steel beams shall be provided.
5. Install accessories, dampers, and controls.
6. Install the boiler smoke breeching, where shown on the Drawings, extending from the boiler's smoke outlets to the openings in the chimney flues with angle frames or collars to receive the smoke breeching. Install cleanout doors near the bottom of the stack. Insulate breeching as per Section 230702: Equipment Insulation (HVAC).

C. Stainless Steel Lining for existing chimneys.

1. Install the stainless steel liner as indicated on the approved Shop Drawings, extending from the chimney base to the roof with angle frames or collars to receive the linings and the cleanout doors near the bottom of the chimney.
2. Assemble and erect lining sections and accessories in compliance with UL listing. Connect base section to foundation using anchor lugs of size and number shown on the Shop Drawings.
3. Joints: Weld joints. Comply with the workmanship quality standards specified in AWS D9.1, Specifications for Welding of Sheet Metal.

3.03 SUPPLEMENTAL ADJUSTING, CLEANING AND TESTING

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- A. Clean breechings, chimneys and stacks internally during installation, to remove dust and debris. Clean external surfaces to remove welding slag and mill film. Grind welds smooth.

A smoke test shall be performed in accordance with the New York City Building Code Section 1704.24. Chimney Connectors (breeching) shall be subject to Special Inspection per New York City Building Code Section 1704.23. Chimneys shall be subject to Special Inspection per New York City Building Code Section 1704.24. The DCLA representative shall witness all smoke tests. Perform the tests when building is not occupied. Isolate the boiler from the tests. No work shall be covered or concealed before testing. The Contractor shall be responsible for inserting temporary plugs (plates, caps, etc.) in all openings, connecting a blower and providing instrumentation (static pressure taps, etc.). The DCLA's Special Inspector shall provide smoke machines, smoke bombs, or other equivalent methods to fill the chimney and breeching with a thick penetrating smoke. As the smoke appears at the stack opening on the roof, such opening shall be tightly closed and a pressure equivalent to one-half inch column of water measured at the base of the stack, shall be applied. Test shall be applied for a length of time sufficient to permit inspection of the chimney. If the test shows any evidence of leakage or other defects, such defects shall be corrected and the test shall be repeated until the results are satisfactory.

END OF SECTION

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SECTION 235201
BOILER ACCESSORIES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide accessories associated with the boilers as needed for a complete and proper installation. Product specific requirements are contained herein; Section 230501, Basic HVAC Requirements, shall be referred to for general requirements.
- B. Boiler accessories specified in this Section include water safety relief valves.

1.02 RELATED SECTIONS

- A. Division 23 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Submit detail of gag for the safety relief valves.
- B. Maintenance data

1.04 SUPPLEMENTAL QUALITY ASSURANCE

- A. Codes and Standards: ASME Compliance: Construct and install boiler accessories in accordance with ASME: Boiler and Pressure Vessel Code. Install boiler accessories in accordance with ASME B 31.1: Power Piping, or ASME B 31.9: Building Service Piping, as applicable. Comply with requirements of NYS and NYC Boiler Codes.

PART 2 - PRODUCTS

2.01 MATERIALS AND MANUFACTURERS

- A. Safety and Relief Valves:
 - 1. Water Relief Valves:
 - a. Pressure Relief Valves: Construct of bronze body, metallic disc, metal seat, with nonmechanically guided stem. Set valve to relieve at 15 psig above operating pressure.

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b. Approved Manufacturers:

Amtrol, Inc.
Bell & Gossett ITT.
Watts Regulator Co.
Or approved equal.

PART 3 - EXECUTION

3.01 SUPPLEMENTAL INSTALLATION

A. Safety and Relief Valves

1. Water Relief Valves: Install on top of boilers.
Pipe discharge to floor drain.

3.02 FIELD QUALITY CONTROL

- A. Flush and clean boiler accessories upon completion of installation, and in accordance with manufacturer's installation instructions.
- B. Hydrostatically test, if required, assembled boiler accessories and piping in accordance with applicable sections of ASME Boiler and Pressure Vessel Code.

END OF SECTION

SECTION 235223
CAST-IRON BOILERS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide equipment for complete installation of low pressure, forced draft, cast-iron, sectional, hot water, natural gas boilers as shown on the Drawings. Product specific requirements are contained herein; Section 230501, Basic HVAC Requirements, shall be referred to for general requirements.

1.02 RELATED SECTIONS

- A. Division 23 Sections
B. Division 26 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Product Data: Product data package shall indicate that the boiler is listed as an assembly by Underwriters' Laboratory Inc.
- B. Shop Drawings:
1. Gas Piping Diagram.
 2. Wiring Diagrams: Submit manufacturer's electrical requirements for power supply wiring to cast-iron boilers. Submit manufacturer's wiring diagrams for interlock and control wiring required for final installation of cast-iron boilers and controls. Clearly differentiate between portions of wiring that are factory-installed and portions to be field-installed.
- C. Test Report:
1. Submit a factory inspection report prior to shipping along with all the tests performed at the factory.
 2. Submit a field inspection report prior to placing the boiler in operation along with all the tests performed at the site.
 3. Submit factory certified prototype test reports for combustion efficiency.
- D. New York City Building Department: Submit a copy of all approved permits **and Certificate of Compliance** from the Department of Buildings, Fire Department, Department of Environmental Protection (Air Resources), Department of

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Highways, and any other department having jurisdiction. Contractor shall obtain permit from the DEP for boilers with fuel input equaling or exceeding 2,800,000 BTUH.

E. Certificate:

1. Compliance with DEP Bureau of Air Resources/DOB Requirements:
 - a. Submit UL 726 listing for oil burning boilers, UL 795 listing for gas burning boilers, UL 726 and UL 795 listings for boilers with dual fuel burners.
 - b. Submit affidavit whether or not the boiler-burner combination is marketed as an Assembly.
 - c. Submit UL-A or ETL listing for the burner.
 - d. Submit UL-B or UL-C if required for boilers (See Supplemental Quality Assurance).
2. Furnish 2 copies of a certificate of test and inspection issued by the boiler inspector who shall be employed by a state agency having jurisdiction or by an insurance company specializing in work of this nature and acceptable to the City of New York.
3. Provide certificate of Hydrostatic Test of boilers **and Certificate of Compliance** - (DOB Boiler Division).

F. New York City Building Department: Submit copy of all affidavits and approved forms.

G. Contract Closeout Submittals:

1. Submit **factory certified** prototype testing **reports indicating** that all boiler/burner combinations have the following minimum combustion efficiencies as **defined below in Table A:**

<u>Type of Boiler</u>	<u>Type of Fuel</u>	<u>Minimum Combustion Efficiency Percentage (%)</u>
Cast Iron	Natural Gas	83

2. Submit operating instruction manuals, complete with schematic wiring and piping diagrams for the boiler, all combustion and operating controls.

H. Provide a set of Manufacturer's guarantees for the boiler, burner and other fuel burning systems.

- I. Videotapes produced during the training.
- J. Certificate: Contractor's start-up and demonstration affidavit.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

A. Codes and Standards:

1. I=B=R Compliance: Provide cast-iron boilers that have been tested and rated in accordance with Institute of Boiler and Radiator Manufacturers (I=B=R): Testing and Rating Standard for Cast-Iron and Steel Heating Boilers, and bear I=B=R emblem on nameplate affixed to boiler.
2. NFPA Compliance: Install gas-fired cast-iron boilers in accordance with NFPA Code 54: National Fuel Gas Code.
3. ASME Compliance: Construct cast-iron boilers in accordance with ASME Boiler and Pressure Vessel Code, Section IV: Heating Boilers.
4. UL and NEMA Compliance: Provide cast-iron boiler ancillary electrical components which have been listed and labeled by UL, and comply with NEMA standards.
5. Insurance Company Compliance: Provide gas train, control devices and control sequences in accordance with requirements of Industrial Risk Insurers (IRI).
6. Boilers shall be approved by the NYC Department of Environmental Protection (Air Resources), and shall be listed and labeled in accordance with UL 795 for gas per to MC 1004.1, FGC 631.1 and 2007 NYSECCC . (Gas fired boilers may alternately be listed and labeled in accordance with ANSI Z21.13 where input is greater than or equal to 300,000 BTUH and less than or equal to 2,500,000 BTUH). The UL listing shall be indicated on the Shop Drawings, and labeled on equipment.

Boiler **shall** comply with all the requirements of the City of New York, the State of New York, local utility, and any other public authorities having jurisdiction.

7. Before submitting any equipment shop drawings for approval, the Contractor, the Equipment Vendor and Manufacturer shall coordinate the controls required for the system.
8. Minimum Combustion Efficiency: Minimum Combustion efficiency shall be as indicated in Table A above for

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the prototype when tested according to the referenced test procedures to determine efficiency for commercial space heating boilers.

At the time boiler shop drawings are submitted, the Contractor shall also furnish a report certifying that a prototype boiler of the same construction type, fuel type and using the same burner as specified for this project has been tested in the factory in accordance with the requirements of Table A. This report shall include all test data that confirms that the requirements of Table A have been met.

9. DEP Bureau of Air Resources Assembly Requirements:

a. Per DEP Bureau of Air Resources, all burners shall be UL-A listed or ETL listed.

b. A UL assembly listing is required for boiler-burner combinations marketed by the manufacturer as an assembly (regardless of the heat release rate) where a given boiler manufacturer/type is always paired with given burner manufacturer(s).

c. A UL assembly listing is required if the following heat release rate is exceeded:

Cast Iron boiler: 40,000 BTU/H

d. Per DEP BAR, a UL assembly listing can be achieved in one of two ways. If the boiler-burner combination is always provided with a specific boiler manufacturer/type paired to a specific burner manufacturer, a UL-B listing is required. If the bare boiler can be provided with various specific UL-A or ETL listed burners, the bare boiler requires a UL-C listing.

1. Field erected boilers that require the UL assembly listing, require a UL-C listing.

2. Manufacturer shall submit affidavit whether or not the boiler-burner combination is marketed as an assembly.

e. Refer to Engineering Criteria Fuel Oil Burning Equipment code issued by the City of New York - Department of Air Resources (1973).

10. NYSECCC Compliance - boilers shall meet the minimum efficiency requirements of the New York State Energy Conservation Construction Code.

11. All appliances regulated by the New York City Construction Codes shall be listed and labeled (reference MC 301.4, MC 301.6). Testing of material and equipment shall be in accordance with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department (MEA) before the effective date of the NYC Construction Codes may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.

1.05 MANUFACTURER WARRANTY

- A. Boiler guarantee shall be for ten years. The guarantee period start date shall be the date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MATERIALS AND MANUFACTURERS

- A. Forced draft, Cast Iron, Sectional, Gas-Fired Boilers:
 1. Provide natural gas, atmospheric cast-iron boiler of capacity indicated.
 - a. Boiler: Construct of cast-iron sections with integral base, sealed with high temperature rope for gas-tight construction, factory-assembled and tested.
 - b. Provide for hot-water boilers: ASME safety valve, combination high- and low-limit controls, and combination pressure-temperature-altitude gauge.
 - c. Accessories: In addition to above, provide the following accessories:
 - 1) Pressure / Water level controls.
 - 2) Low water cutoff and feeder combination.
 - 3) Draft damper.
 - 4) Side inspection openings with plugs.

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- 5) Draft sensing line, per B.A.R.
- d. Burner: Provide flame retention power burner for natural gas as specified in Section 235224: Fuel Burning/Pumping Equipment. Provide burner and factory-wired control panel for operation as required.
- B. Every boiler shall have a shutoff valve in the supply and return piping.
- C. A remote control shall be provided to stop the flow of gas and combustion air to any burner or fuel burning internal combustion equipment. Such control shall be located outside all means of egress to the room in which the burner or equipment is located and as close to such entrances as practicable. All such controls shall be labeled: "REMOTE CONTROL FOR BURNER". (Refer to MC 1006.8.1).
- D. Approved Manufacturers:
- Smith (The H. B.) Co., Inc.
Weil-McLain;
A Marley Co.
Or approved equal.

2.02 HOT WATER BOILER TRIM

- A. Hot Water Connections: Supply and return connection shall provide internal thermal circulation that will mix return water with hot water in boiler.
- B. Dip Tube: Provide as integral part of the hot water outlet, an air vent tapping in boiler shell for removal of entrained air.
- C. Low water pressure cutoff with manual reset: pressure sensor linked to burner control circuit to prevent burner operation if boiler water pressure inside boiler falls below safe level recommended by Manufacturer.
- D. Dial type combination pressure and temperature gauge or a separate pressure gauge and thermometer. Gauges shall be of the dial type, minimum of 4" in diameter, and if separate gauges are installed, both gauges shall be located where they may be easily observed and read, adjacent to the hot water outlet.
- E. Water relief valves of type and size to comply with ASME Code requirements.

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- F. Temperature controls - high limit (manual reset), operating limit (auto reset) & firing rate control - to regulate burner operation; mount temperature sensing elements adjacent to hot water outlet.
- G. Pressure controls: High pressure limit control.
- H. Provide for constant circulation through the boiler to minimize thermal stresses. The failure of circulating pump shall cause the boiler to be shut down, requiring manual reset.

2.03 INSPECTION

- A. The boilers shall be inspected during construction in the shop of the manufacturer by an inspector of an approved boiler insurance company, or of a State Labor Department, and NYC Department of Building Boiler Division. After completion of construction, each boiler shall be successfully tested at the shop at 60 psi hydrostatic pressure and in field at Code required pressures. The boiler shall be stamped legibly with all identifying marks and symbols, the manufacturer's name, the allowable working pressure in pounds per square inch, the year of manufacture, and all other markings required by the latest editions of the New York State and the ASME Boiler Codes.
- B. Furnish and deliver in duplicate, one copy to the City of New York and one copy to the Boiler and Licensing Division of the Department of Buildings of the City of New York, a certificate of test and inspection for each boiler issued by the boiler insurance company or State Labor Department which made the inspection. These certificates shall furnish all data required by the New York State and ASME Codes.

2.04 BOILER CONTROL POINTS

- A. Boiler manufacturer shall provide integration of monitoring and alarm functions by providing control points as indicated on the drawings. Boiler manufacturer shall provide gateway to convert from their protocol to the LonWorks Protocol (LonTalk).

PART 3 - EXECUTION

3.01 SUPPLEMENTAL INSTALLATION

A. General

- 1. The Contractor shall comply with Department of Buildings Regulations concerning the installation of the boilers,

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and shall file with that department all required information before starting the boiler installation.

2. Install boilers in accordance with manufacturer's installation instructions, in accordance with New York State and City Code requirements, and in accordance with requirements of local Utility Company. Install units plumb and level. Maintain manufacturer's recommended clearances around and over boilers.
 3. Per MC 1004.3, clearances shall be maintained around boilers, heaters and tanks and related equipment and appliances so as to permit inspection, servicing, repair, replacement and visibility of all gauges. When boilers are installed or replaced, clearance shall be provided to allow access for inspection, maintenance and repair. Passageways around all sides of boilers shall have an unobstructed width as required by the manufacturer and in no case less than 18 inches.
 4. Approved piping and wiring diagrams and installation instruction shall be obtained from the manufacturer and followed in the installation of the boilers.
 5. Install boilers/burners in accordance with State Code, New York City Code and Local Utility Company Requirements.
 6. Each boiler/burner unit shall be electrically grounded as specified and recommended by the manufacturer and regulatory agencies.
- B. Support: Install boilers on 4" thick concrete pad. Boiler shall be provided with legs on a base to maintain a space between the bottom of the boiler sections and the concrete boiler base, for natural ventilation.
- C. Erection: Assemble boiler sections in proper sequence and with sealing between each section. Assemble boiler trim shipped loose, or unassembled for shipment purposes. Follow manufacturer's installation instructions.
- D. Electrical Work: Install electrical devices furnished by manufacturer but not specified to be factory-mounted. Furnish copy of manufacturer's wiring diagram submittal to Electrical.
1. Furnish the burner emergency break-glass shutoff switch for installation as defined in Section 262419, Motors, Motor Control Centers, Starters and Control Equipment.

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2. The Contractor shall provide control wiring between boiler control panel and thermostats, aquastats, pressurestats, or any other control device. The Contractor shall provide DDC controller and wiring between boiler control panel and DDC controller.
3. Provide factory-mounted and wired controls and electrical devices as specified in this section.
4. Refer to Electrical sections for all electrical work including motor starters, disconnects, wires/cables, raceways, and other required electrical devices not supplied by the manufacturer but required.
5. Verify that electrical work installation is in accordance with manufacturer's submittal and installation requirements of Electrical sections. Do not proceed with equipment start-up until electrical work is acceptable to the Commissioner and Boiler Manufacturer's Representative.
6. The Contractor shall provide liquid tight flexible metal conduit (Sealtite) for final conduit connections to all the motors.

E. Miscellaneous

1. Connect gas piping to boiler, full size of boiler gas train inlet as a minimum. Provide union with sufficient clearance for burner removal and service.
2. Hot Water Piping: Refer to Section 230503: HVAC Piping. Connect supply and return boiler tapping as indicated, with shutoff valve and union or flange at each connection.
3. Breeching: Refer to Section 235100: Breeching, Chimney, and Stack. Connect breeching to boiler outlet, full size of outlet. Route as indicated.

3.02 FIELD QUALITY CONTROL

- A. Flush and clean cast-iron boilers upon completion of installation, in accordance with manufacturer's start-up instructions.
- B. Hydrostatic Test
 1. The Contractor shall arrange for tests of the boilers at the rated hydrostatic pressure by the Department of Buildings, and shall pay all fees involved. He or she shall notify the Commissioner or building manager by letter, at least 48 hours in advance of the time at which such tests are to be made.

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2. A certificate of the Department of Buildings test shall be obtained by the Contractor, and shall be delivered to the Commissioner immediately after the boiler tests have been completed.
- C. Start-up cast-iron boilers, in accordance with manufacturer's start-up instructions, and in presence of boiler manufacturer's representative. Test controls and demonstrate compliance with requirements. Replace damaged or malfunctioning controls and equipment.
- D. The Commissioner and/or building manager shall witness operation of all safety valves at rated pressure.

3.03 DEMONSTRATION

- A. Preliminary Requirements: Provide the services of the field service representative of the boiler manufacturer for the following:
 1. Inspect each boiler installations prior to start-up.
 2. Supervise initial firing of boilers.
 3. Instruction of City of New York Designated Personnel.
- B. Instruction of City of New York Designated Personnel: The manufacturers' representative shall instruct the building manager in the operation and maintenance of the boilers and all items and accessories. Provide a minimum of 40 hours for instruction purposes, exclusive of all pre-start-up, start-up and service call time. Training of personnel shall be videotaped by the trainer (or Contractor).
- C. Start-up: The Contractor shall perform necessary Interdisciplinary Tests and Functional Performance Tests according to the manufacturer's procedures.
 1. Replace damaged or malfunctioning controls and equipment.
 2. Perform services in accordance with manufacturer's written start-up instructions.
- D. Maintenance and Operation Training
 1. The Contractor shall prepare a detailed, coordinated step-by-step maintenance and operations manuals covering all boilers equipment and all other items and accessories as per Section 230501.
 2. As a part of the maintenance and operating instructions, review data in operating and maintenance manual,

including preventative maintenance schedule and procedures, and procedures for obtaining repair parts and technical assistance. Demonstrate all phases of operation including start-up and shutdown.

- E. Schedule training with the City of New York and provide at least 4 days notice to the City of New York and building manager.

3.04 BOILER CLEANING AND WATER TREATMENT

- A. The Contractor shall retain the services of a reputable water treatment service company. This company shall test boiler water biweekly and provide a written report biweekly with recommendations for chemical treatment as soon as the system is filled with water. This same company shall provide water treatment service and inspection every two (2) weeks during temporary heating and for one (1) year after Substantial Completion.
- B. Prior to start-up the Contractor shall flush and clean the water/steam side of the boiler to remove all rust and deposits. Cleaning agents to be used shall be as recommended and approved by the Chemical Treatment Firm and by the Boiler Manufacturer.

3.05 ACCEPTANCE TEST

- A. Boilers/Burners shall not be placed in operation until completion of construction, inspection and testing and a Certificate of Compliance has been issued by the Commissioner. All final inspections and tests of boilers/burners shall be subject to the provisions for Special Inspections except for inspections and tests made by a qualified boiler inspector in the employ of the Building Department or a duly authorized insurance company as provided in section 204 of the labor law.

3.06 INTERDISCIPLINARY TESTS AND FUNCTIONAL PERFORMANCE TESTS

- A. Interdisciplinary Pre-Start-Up and Start-Up Tests:
The Contractor shall conduct interdisciplinary pre-start up and start up tests as per the manufacturer's start up procedures. The Contractor shall submit signed start up affidavit signed by the factory authorized service representative indicating that all of the manufacturer's pre-start up and start up procedures have been successfully completed.

B. Functional Performance Tests:

The Contractor shall also submit signed functional performance testing affidavit signed by the factory authorized service representative indicating that all of the manufacturer's functional performance tests have been successfully completed. Refer to the Drawings and Section 230993 since a BMS/DDC system is to be provided and the equipment is to be integrated into the BMS/DDC system.

3.07 COMMISSIONING OF CAST IRON BOILERS

- A. The Contractor shall comply with the Commissioning Requirements of Contract Specification for Cast Iron Boilers.
- B. For Cast Iron Hot Water Boilers, all testing for hot water piping, gas piping and hydrostatic testing of boilers, shall be completed prior to commencement of the commissioning process.
- C. The following Commissioning Requirements are presented to supplement the full range of responsibilities placed on the Contractor by the Contract Documents. The Contractor is responsible to ensure the sub-contractors and manufacturer's providing services for the Contractor perform their required tasks.
1. Contractor Quality Control
 - a. Coordinate initial review and processing of submissions and contract deliverables in accordance with applicable technical specifications and Contractor Quality Control (CQC) Program.
 - b. Implement the three-phase QC Inspection System as outlined in the Contractor Quality Control Program.
 - 1) Preparatory Inspections
 - 2) Initial Inspections
 - 3) Follow-Up Inspections
 - c. Schedule and coordinate with the Commissioner, the Special Inspections and Periodic Inspections.
 - d. The Contractor shall perform necessary Interdisciplinary Tests, Functional Performance Tests, and Acceptance Tests as described in the manufacturers' literature required by the Contract and this specification.

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- e. Coordinate and maintain documentation required for the commissioning process as part of the CQC activities, including the documentation of subcontractors and suppliers.
 - f. Prior to Substantial Completion and as a condition for such, the Contractor shall demonstrate substantial conformance with applicable Interdisciplinary/Functional Performance and Acceptance Tests for all equipment and systems as detailed in the Contract Documents.
2. Subcontractors and Suppliers Quality Control
- a. Prepare and submit appropriate contract submissions for approval.
 - b. Perform all required Interdisciplinary, Functional Performance Tests, and Acceptance Tests required by Contract documents.
 - c. Perform all corrections and adjustments to the work and re-test as required.
3. Manufacturer's Representatives Quality Control
- a. Provide training and training data as required by Contract.
 - b. Coordinate special tests, demonstrations and start-up details as required.
 - c. Provide warranties, guarantees, and certifications as required by Contract.
 - d. Provide technicians who are familiar with the construction and operation of installed systems and who shall be on call for start-up, training and turn-over operations.

END OF SECTION

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SECTION 235224
FUEL BURNING EQUIPMENT
(FOR HOT WATER BOILERS)

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide equipment required for the installation of a complete system for the burning of natural gas. Product specific requirements are contained herein; Section 230501, Basic HVAC Requirements, shall be referred to for general requirements.
- B. The burner is part of the boiler unit and shall be supplied by the same manufacturer as the boiler.

1.02 RELATED SECTIONS

- A. Division 22 Sections
- B. Division 23 Sections

1.03 SUPPLEMENTAL SUBMITTALS

Burners will be submitted with the boilers.

- A. Shop Drawings
 - 1. Submit a complete set of Shop Drawings for burner, and appurtenances as required and defined in Section 230501.
 - 2. All burners shall bear the UL Listing Mark (A) or shall be ETL listed.

For detailed heat release and Listing requirements, refer to the Engineering Criteria, Fuel Burning Code issued by City of New York - Department of Air Resources 1973, paragraphs 2 and 3.

- B. Wiring Diagrams: Submit manufacturer's electrical requirements for power supply wiring to boilers/burners. Submit manufacturer's wiring diagrams for interlock and control wiring required for final installation of boilers/burners & controls. Clearly differentiate between portions of wiring that are factory-installed and portions to be field-installed.

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- C. Maintenance Data: Submit maintenance data and parts list for each burner, control and accessory; including "trouble-shooting" in the maintenance guide. Include the Combustion System Manager Software for Network Interface Units requiring Personal Computer and Operator Interface Software.
- D. Test Report
 - 1. Submit factory certified test results prior to shipping.
 - 2. Submit field test and inspection reports prior to placing the burner in operation
- E. Submit all the videotapes produced during the training.
- F. Permits and Approvals
 - 1. New York City Permits and Approvals: Submit a copy of all approved permits from the Department of Buildings, Fire Department, Department of Environmental Protection (Air Resources), Department of Highways, and any other department having jurisdiction.
- G. Piping and Wiring Diagram: Provide "As Built" wiring diagram and piping layout of the gas for the boiler/burner or burner system. The diagram and layout shall be framed and mounted where directed in the Boiler Room. Frame shall be of aluminum satin finish, with one side of frame removable and with a plywood backing. Provide safety glass in the front. All parts of the installation shall be indicated exactly as installed and shall be properly identified. Valve identification numbers shall agree with valve tags of Section 230553: HVAC Identification and all piping shall be clearly shown and labeled.
- H. Certificates:
 - 1. Certificate of Operation: At completion of the burning system installation work, obtain a "Certificate of Operation" from the Department of Environmental Protection (Air Resources) and deliver this certificate to the Commissioner.
 - 2. Certificates of approvals
 - 3. Federal and New York State Certifications.
 - 4. Submit UL-A or ETL listing for the burner.

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5. Certificate of Compliance

- I. Provide a set of manufacturer's guarantees for each burner and other fuel burning appurtenances.
- J. Maintenance Materials
- K. Certificate: Contractor's start-up and demonstration affidavit.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

A. Codes and Standards

- 1. NFPA Compliance: Install gas-fired burners in accordance with NFPA Code 54-2006: National Fuel Gas Code and related NYC Fuel Gas Code Amendments.
- 2. Industrial Risk Insurers Compliance: Install gas fired burner's gas train piping in full accordance with Industrial Risk Insurers (IRI) requirements. Control devices and control sequences shall also be in accordance with Industrial Risk Insurers (IRI).
- 3. All appliances regulated by the New York City Construction Codes shall be listed and labeled (reference MC 301.4, MC 301.6). Testing of material and equipment shall be in accordance with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department (MEA) before the effective date of the NYC Construction Codes may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.
- 4. Per DEP Bureau of Air Resources, burners shall be listed per UL-A or ETL.

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- B. Fuel burning equipment shall be designed to operate satisfactorily and efficiently without objectionable smoke, odor, or noise.
- C. Special Inspections are required on any installation of fresh air louvers, dampers, fresh air fans, fuel burners, gas piping, boilers, and all other items and accessories, in accordance with the requirements of New York City Building Code.
- D. At the completion of the Work, file all necessary final applications and relevant papers, Drawings, Amendments, and all other items and accessories and secure for the COMMISSIONER, a Certificate of Operation from the NYC Bureau of Air Resources and the NYS Department of Environmental Conservation for the burning system and all the approvals from the Building Department and the Bureau of Electrical Control. Submit with the request for final payment proof of filing for an inspection certificate from the Bureau of Electrical Control and a certificate of satisfaction from the Building Department. Acceptable evidence of filing with the Bureau of Electrical Control will be the job posting card issued by the Bureau.
- E. Contractor is responsible for any and all fees assessed by the NYC Bureau of Air Resources for inspection and/or cancellation if the initial BAR inspection fails to result in the issuance of the Certificate of Operation for the installation.
- F. Certificates of approval issued by the Building Department, Department of Health, Department of Water Resources, Bureau of Electrical Control, Fire Department, Department of Air Resources, Department of Highways, and all other departments having jurisdiction in connection with this Work shall be submitted.
- G. The Contractor shall register, file applications and obtain all related permits, certifications and approvals required by all agencies including but not limited to:
 - 1. Plumbing Inspection - sign off (DOB).
 - 2. Bureau of Electrical Controls. (DOB/BEC).
 - 3. Environmental Protection Agency (Federal).
 - 4. STATIONARY COMBUSTION INSTALLATION - Application/ Permit New York State Department of Environmental Conservation (D.E.C.).
 - 5. APPLICATION FOR CERTIFICATE OF OPERATION OF FUEL BURNING EQUIPMENT, Air Resources (B.A.R.) Tests,

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Inspection and Certificate of Operation - NYC
Department of Environmental Protection (DEP).

6. Coordination, inspection and approval by the
Natural Gas Utility Company.

7. Certificate of Compliance

H. Before submitting any equipment shop drawings for
approval, Contractor and the Equipment Vendor and
Manufacturer shall coordinate the controls required for
the system.

I. Per NYC Fuel Gas Code 403.9.3, joints and connections
shall be approved and of a type approved for natural gas
piping systems. All threaded joints and connections
shall be made tight with suitable lubricant or pipe
compound. Pipe joint compounds and thread seal tape that
utilize Teflon (PTFE) shall be approved for usage on
natural gas lines.

1.05 MANUFACTURER WARRANTY

A. Burner guarantee shall be for two years. All other
guarantees shall be for one year. All guarantee periods
shall start at Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. If burners are provided with the boilers: burners shall
be provided by the same manufacturer as the Boilers.
Refer to the following Sections:

Section 235223: Cast Iron Boilers

Boiler Manufacturer shall select burners that
comply with the specifications and best match
the boilers.

B. Approved manufacturers are as follows:

1. Gordon Piatt
2. Powerflame
3. S.T. Johnson
4. Or approved equal

2.02 BOILER BURNER

A. Each burner shall be arranged for single fuel operation
of natural gas. Adjust burner and controls so that the

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combustion efficiency is maintained automatically at the minimum efficiency values indicated in Specification Section 235223.

- B. Burner shall be of the high static forced draft type. All of the combustion air shall be provided by an integral blower of the forward curved type, direct drive 120 volt, 1 phase motor. The blower fan shall be mounted directly on the blower motor shaft and the entire assembly shall be removable as a single unit through the motor side of the burner. The burner shall be steel of the all welded construction and shall have a stainless steel flame retention firing head. The burner shall be equipped with twin combustion air inlet shutter dampers with nylon bearings for smooth and repeatable operation of the dampers.
- C. Burner shall be provided with a gas spark ignition pilot. Pilot piping shall have a factory installed shut off cock, "Y" strainer, low gas pressure switch, gas pressure regulator, plugged leakage test connection and two (2) solenoid pilot safety shut-off valves. Provide a lubricated plug cock in the field piping directly before the pilot piping. Provide a "Y" strainer after the lubricated plug cock. Transformers, relays, switches and other accessories required to make the burner systems operative shall be provided. Refer to Plumbing for venting of pilot piping.
- D. Burner Gas System
 - 1. The gas burning components shall be of the multiport type designed to inject many high velocity jets of gas into the combustion air stream.
 - 2. Gas Train: The burner manufacturer shall provide a factory assembled and pre-wired gas train (manifold). The gas train burner manifold shall be capable of providing sufficient gas to the burner for burner operation at the full firing rate of the boiler with the required gas pressure at the inlet to the gas burner manifold. Gas train shall include the following components: Gas pressure regulator, motorized primary safety shut off valve with proof of closure switch, high and low gas pressure switches, a second motorized safety shut off valve, plus a normally open solenoid operated vent valve located between the two safety shut off valves, pressure gauges at regulator inlet and outlet and burner manifold, strainers, manual gas shut off valves, and plugged test cocks.

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E. Burner Controls

1. Provide all the controls, including the protective and modulating flame control devices required for the safe operation of all the burning equipment. Provide all the electric wiring for the burner controls. Safety devices, including pressure controls, combustion controls, relays, and all other items and accessories, shall have their electric switching mechanism connected to an ungrounded conductor or conductors.
 - a. Controls for burner shall include automatic gas-electric ignition with magnetic gas valve, ignition transformer, electronic flame failure programming control, safety devices, and all other items and accessories. Gas piping, sensing devices, transformers, relays, switches and other accessories required to make the burner system operative, shall be provided.
 - b. Each system shall also be equipped with a flame failure control, low water pressure cut-off, temperature operating control, pressure limit control, smoke alarm shutdown, and all other items and accessories.
2. Solenoid Valves: Each burner shall be provided with 120-volt normally closed, packless solenoid valve in the pilot gas supply. The pilot gas valve shall be wired into the burner programming circuit to open only at the end of the pre-purge period and to remain open until the main flame has been proven. Gas valve shall be UL approved, and, in addition, shall be approved by the American Gas Association. Each solenoid valve shall be manufactured by Automatic Switch Co. (ASCO), Honeywell, ASCO/General Controls Co. The solenoid pilot gas valve shall be designated by the manufacturer for use with natural gas at the pressure available.
3. Temperature Limit Control: Provide on each boiler a temperature limit control, wired in series with all other control devices to the ungrounded conductor, to stop the burner and to interrupt completely the power to the flame failure control if the boiler water temperature exceeds the limit recommended by Manufacturer. Limit controller shall be equipped with a manual reset feature.

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4. Flame Failure Control
 - a. Each burner shall be provided with a flame failure (combustion safety) programming control which will de-energize all electrically operated fuel valves and burner equipment within four seconds, and actuate a visual alarm mounted on the control panel after an operating flame failure has occurred. Automatic start up and shutdown programming shall be a part of this safety equipment.
 - b. Pilot and main flame shall be detected by a lead sulphide infrared or ultraviolet scanner as per burner manufacturer's recommendation. Scanner shall be so located as not to be actuated by hot refractory or other hot body. When ultraviolet flame detection is used, a test is required to verify that ultraviolet radiation from the ignition spark is not being detected.
 - c. Control shall provide for prepurge prior to light off, proof of pilot before main fuel valves open, proof of main flame only during run, and post purge at the end of each firing period. Control shall affect a safety shutdown prior to the opening of the main fuel valves if the presence of the pilot flame has not been proven.
 - 1) Burner pre-purge cycle and post-purge cycle shall operate as follows: The pre-purge cycle shall be 100% purge air flow and shall have a duration equivalent to a minimum of 4 air changes. The post-purge cycle shall be 15 seconds minimum.
 - d. In case of electrical power supply failure, control shall recycle automatically when power is restored. In case of safety shutdown, control shall not permit recycling of the burner equipment until after the manual operation of a reset button.
 - e. The control shall accomplish a safe start component check during each start.
5. Provide a low fire hold minimum temperature aquastat and wire into limit circuit to prevent boiler from switching to high fire until water temperature reaches 140° F or a temperature recommended by boiler Mfr. Aquastat shall be

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similar to Honeywell Model L 4006B or L6006A and shall be installed in tapping in the boiler shell.

6. Night setback: existing buildings - provide a seven day programmable electric clock linked to boiler-burner controls; night and unoccupied times (weekends / holidays) shall be programmed to operate in a setback mode; the clock should have overriding capability. During occupied times, the hot water header temperature controls the burner firing. An outdoor temperature sensor (set at 40^o F) together with a thermostat (with temperature set back at 55^o F) in the coldest room will determine the burner operation during the unoccupied hours. The header temperature limiting control device shall always be functional.

F. Burner Control Panel:

1. The burner manufacturer shall provide for each boiler/burner, boiler/burner control panel that shall house all required operating controls and electrical components. The burner control panel shall be constructed of not less than 16 gage sheet steel in accordance with NYC Electrical Code and shall be complete with hinged and removable front access door. The panel shall contain the following equipment assembled, connected and wired:
 - a) Burner Motor Circuit Breaker
 - b) Burner Motor Starter
 - c) Forced Draft Fan Motor Circuit Breaker
 - d) Forced Draft Fan Motor
 - e) Control Circuit Transformer
 - f) Control Power ON-OFF Switch
 - g) Manual-Automatic Switch
 - h) Control Potentiometer
 - i) Low Fire Potentiometer
 - j) Flame Safeguard & Programming Control
 - k) Alarm Silence Push Button
 - l) Alarm Bell
 - m) Flue Temperature Gauge
 - n) Smoke Density Monitor

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2. The following lights and/or alarms shall be included as a minimum readable from the exterior of a closed control panel:

	<u>Light</u>	<u>Alarm</u>
Power On	x	
Flame Failure	x	x
Pilot ON	x	
Main Gas Valves ON	x	
Pre purge	x	
Post Purge	x	

3. Local display shall afford the operator the maximum amount of information in an easily understood format. Storage capacity shall include the number of alarm failures for each point as well as the following information

Time Gas Firing

4. Interface Drawings shall be provided by the boiler/burner manufacturer for the entire control system of the boiler/burner and auxiliaries including but not limited to make-up water and code related devices as controlled by the burner control panel. Two drawings shall be provided. One a ladder diagram for sequence of operation and two, a line drawing of the actual wiring of the panel complete with wire numbers and color code.

- G. All smoke alarm controls and stack controls installed in the stacks shall be fitted with glass lens caps, sealing bellows or equal approved method to assure positive stack seal.

2.03 HOT WATER BOILER EQUIPMENT CONTROL POINTS

A. CONTROL SYSTEM "GATEWAY"

The manufacturer of the electronic fuel burner plant controller shall provide a protocol translator gateway for native control systems that are not LonWorks compliant in order to convert to the LonTalk protocol (ANSI approved standard EIA/CEA-709.1-A-1999).

The protocol translator gateway shall enable the electronic fuel burner plant controller network devices to communicate directly with the COMMISSIONER's LonWorks based Building Management System.

Provide interoperable protocols as specified: Modbus,

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Profibus, or approved equal. Use of a proprietary burner management protocol other than Modbus or Profibus is subject to approval of the Commissioner.

The data transfer between Modbus/Profibus and the LonTalk protocol shall provide the required Standard Network Variable Types (SNVTs) and configuration parameters to monitor the Hot Water Boiler plant from the LonWorks based Building Management System using the LonTalk protocol.

The data transfer between the manufacturer's hot water boiler electronic control panel and the HSA LonWorks based Building Management System is to be accomplished using a Field Server, or approved equal, protocol translator gateway and additional integration hardware specified below. All the required software and configuration files shall be provided and be downloadable via the serial or Ethernet port of the gateway.

Where the use of a unique proprietary protocol is utilized by the burner manufacturer, a custom designed configurable "gateway" shall be provided by the manufacturer of the burner. Use of a unique burner manufacturer proprietary protocol is subject to the approval of the Commissioner.

The burner manufacturer shall retain the services of a Field Server approved Systems Integrator, or approved equal, who shall demonstrate the proper integration of the boiler control system to the satisfaction of the Commissioner and in accordance with the requirements of the Drawings and Specification Sections.

Submit manufacturer's wiring diagrams for interlock and control wiring required for final installation of the burner controls interface. Clearly differentiate between portions of wiring that are factory-installed and portions to be field-installed by the burner control panel manufacturer.

The above addresses electronic burner control systems. For electric air/fuel burner control systems utilizing digital cut-in/cut-out controls only without analog header aquastat, the Contractor shall provide sensors, wells, control devices, current switches/transformers, LonWorks Controllers, etc. as required to comply with the Drawings and the Sequence of Operation indicated in Specification Section 230993.

2.04 FLUE GAS TEMPERATURE INDICATORS

- A. Provide a thermocouple type flue gas temperature indicator for each boiler. Thermocouple shall be located

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on the boiler smoke box, and the indicator shall be flush mounted in the burner control cabinet. Temperature scale shall be graduated in 10° increments, from 0° F. to approximately 1000° F. Excess thermocouple wire shall be coiled and secured within the control cabinet. Installation shall be made in accordance with the manufacturer's written instructions. Flue gas temperature indicators shall be Preferred Instruments Model JC11F or equal.

2.05 FIRE EXTINGUISHER

- A. Provide in location at each burner, one 5 pound capacity BC dry chemical charge fire extinguisher.

PART 3 - EXECUTION

3.01 SUPPLEMENTAL INSTALLATION

A. Electric Work:

1. The Contractor to provide at a minimum, burner, control wiring, power wiring connections from each burner control cabinet to burner and all other items and accessories to make system fully operational. Equipment shall be provided with terminal boxes to receive connecting conduits. The use of wire nuts in lieu of terminal boxes for the splice connections is prohibited. All electric work shall conform to the requirements of the Bureau of Electrical Control, and other authorities having jurisdiction. File an application for electrical inspection with the Bureau of Electrical Control. At the completion of the electrical work, submit with the application for progress payment, the pink copy of the job posting card issued by the Bureau of Electrical Control in connection with each application for certificate of electrical inspection.
2. Contractor to provide power wiring to burner control cabinet and all other items and accessories to make system fully operational. For packaged assemblies, the Contractor to provide terminals on the equipment to receive the service wiring, together with motor starters, contactors, protective and disconnecting devices, and all other items and accessories, as required to make the installations complete. Contractor to provide all wiring between the control cabinets and the burner equipment, burner controls and emergency cut-out switches, low water cut-offs, smoke density

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monitors, forced draft fans, draft sequence equipment and outside air intake damper motors.

3. Conduit: Wiring shall run in conduit in accordance with the NYC Electrical Code, except the wiring in control cabinets, and where flexible connections are necessary. Wiring connections between each control cabinet and the ignition assembly box shall be in either standard conduit with oil impervious gasketed connections or in flexible oil tight conduit (Sealtite). Wiring connections between the ignition assembly box and the burner motor, between all motors and all other items and accessories shall be in flexible oil tight conduit with Scotchlok 2 connectors inside junction box. In other locations, flexible metal conduit (Sealtite) may be used for final connections not exceeding 3' in length. Conduits shall be not less than 3/4", standard weight galvanized steel conduit, large enough to accommodate the wires specified. Flexible oil tight conduit (Sealtite) shall be U.L. approved. No conduit shall be installed contact with the boiler room floor.

4. Conductors:

a. Conductors shall be copper of 98% conductivity, and free of splints, flaws, or other defects. They shall be in accordance with the NYC Electric Code, and with Bulletin No. 8, 1963 of the Department of Water Supply, Bureau of Electrical Control. Conductors shall be delivered in their original packages or reels, which shall be marked with the manufacturer's identification and date of manufacture. Conductors manufactured more than one year prior to delivery at the job will not be accepted.

b. Wiring between the burner control cabinet and associated equipment installed shall be type THHN, 90° C, 600 volts.

5. Magnetic Motor Starters (for packaged equipment): Starters for control of the motors shall be magnetic type and shall be equipped with proper size thermal overload relays, and enclosed triple-pole (25-ampere contactor) magnetic switch providing overload and voltage failure protection. Where motor starters with disconnect switches are required, the starters may be combination type. Where fuse protection are required, the starters shall be equipped with proper size fuses.

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- B. Per MC 1004.3, clearances shall be maintained around equipment and appliances so as to permit inspection, servicing, repair, replacement and visibility of all gauges. When equipment is installed or replaced, clearance shall be provided to allow access for inspection, maintenance and repair. Passageways around all sides of equipment shall have an unobstructed width as required by the manufacturer and in no case less than 18 inches, unless otherwise approved by the Commissioner.

3.02 FIELD QUALITY CONTROL/INTERDISCIPLINARY TEST AND FUNCTIONAL PERFORMANCE TESTS

A. Performance Tests

1. Performance tests are required upon the completion of the burner installations. Performance tests shall be conducted in compliance with Part II of the Engineering Criteria Fuel Oil Burning Equipment. Test holes 5/16" in diameter shall be drilled in numbers and locations approved by the Bureau of Air Resources. Insulation (if any) around the test hole location shall be removed from an area 4" by 4", dust removed and exposed insulation walls painted. The Contractor shall submit signed functional performance testing affidavit signed by the factory authorized service representative indicating that all of the manufacturer's functional performance tests have been successfully completed and that the equipment is operating as designed.
2. Prior to the date of the scheduled performance test to be conducted by the Bureau of Air Resources' personnel, and on a date convenient to the Commissioner, Contractor shall demonstrate that:
 - a. The burner is limited by a means approved by the Bureau of Air Resources to a burning rate approved in the Work Permit.
 - b. With breeching damper in open position, the pressure drop across the damper does not exceed 0.05" water column at high fire.
 - c. That the burner flame, at maximum or "high" fire does not impinge on any refractory or boiler surfaces.
 - d. The "turndown" ratio of the burner shall not be less than specified.

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3. The Contractor shall test the LonWorks DDC interface gateway system and demonstrate compliance with requirements of the Specifications to the satisfaction of the Commissioner. Replace all damaged and malfunctioning controls and equipment. The Contractor shall submit written affidavit indicating that the equipment is operating as designed.
 4. Provide manpower, scaffolds, instruments, burner operators and invite the Commissioner, as required to perform a test of the operation of all the installed equipment including a pre-performance test similar to that described in the Bureau of Air Resources Criteria. This test shall precede the actual performance test conducted by Bureau of Air Resources personnel on their inspection date, by no more than 10 working days. The Contractor shall have a licensed oil burner operator present at this pre-performance test and at the final one.
 5. After the aforementioned adjustments are made and all violations corrected, Contractor shall, on the date designated by the Bureau of Air Resources, return with all necessary manpower, scaffolds, and any other items and accessories, all as above listed and as needed to assist at the performance test required by the Bureau of Air Resources
- B. Supervisory Personnel: Provide field service personnel in the employ of the Fuel Burning Equipment and Control System Manufacturer for such time as required to put installed equipment into operation. Supervisory services shall include the following:
1. Inspect fuel burner and control installations prior to start-up.
 2. Supervise initial firing of burners.
 3. Boiler/Burner testing.
 4. Training of Personnel.
 5. Service.
- C. Boiler Pré-Start Up and Start-Up Interdisciplinary Tests:
1. Upon completion of boiler/burner and controls installations, all manufacturers representative shall visit the site; inspect the installations and notify the Commissioner of any Work which must be done or modified prior to firing boilers.

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2. Upon completion of required Work, or modifications to installed Work and all pressure testing, the manufacturer's representative and Commissioner shall supervise the boiler/burner start-up.
 3. Fire the boilers and conduct a preliminary test, for the purpose of checking general operation of the boilers, proving mechanical and electrical controls and making necessary adjustments. All tests shall be made in the presence of the Commissioner. The Contractor shall submit a signed start-up affidavit signed by the factory authorized service representative indicating that all of the manufacturer's pre-start up and start up interdisciplinary test procedures have been successfully completed.
 4. Provide pre-start up check list, start-up list and operating instructions for each boiler, framed under rigid plastic and place where directed in the Boiler Room.
- D. Boiler Tests: Manufacturer's representatives shall be present for all specified boiler tests.
- E. Training of Personnel: Approved Fuel Burner and Control System manufacturer's representatives shall instruct duly authorized personnel in the operation and maintenance of the fuel burners and control systems. Provide a period of 5 days (8 hours per day), not to include travel time for on-site instruction of personnel. This time shall be exclusive of all pre-start-up, start-up and service call time. Provide supervisors capable of instruction, in all phases of fuel burner and control construction, operation and accessories.
- G. Service: Provide the services of a competent field service representative to furnish fuel burner/boiler service to the facility. Service must be available within 48 hours from the time of notification.

3.03 ACCEPTANCE TEST

- A. Boilers/Burners shall not be placed in operation until completion of construction, inspection and testing and an equipment use permit has been issued by the Commissioner. All final inspections and tests of boilers/burners shall be subject to the provisions for controlled inspections.

END OF SECTION

SECTION 236313

AIR-COOLED CONDENSING UNITS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes refrigerant condenser package, charge of refrigerant and oil, controls and control connections, refrigerant piping and connections, motor starters, electrical power connections.
- B. Division 23 Sections

1.2 REFERENCES

- A. Air-Conditioning and Refrigeration Institute:
 - 1. ARI 210/240 - Unitary Air-Conditioning and Air-Source Heat Pump Equipment.
 - 2. ARI 365 - Commercial and Industrial Unitary Air-Conditioning Condensing Units.
 - 3. ARI 460 - Remote Mechanical-Draft Air-Cooled Refrigerant Condensers.
- B. American Society of Heating, Refrigerating and Air-Conditioning Engineers:
 - 1. ASHRAE 15 - Safety Code for Mechanical Refrigeration.
 - 2. ASHRAE 20 - Method of Testing for Rating Remote Mechanical-Draft Air-Cooled Refrigerant Condensers.
 - 3. ASHRAE 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings.
- C. National Electrical Manufacturers Association:
 - 1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
- D. Underwriters Laboratories Inc.:
 - 1. UL 207 - Refrigerant-Containing Components and Accessories, Nonelectrical.

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1.3 SUBMITTALS

- A. Shop Drawings: Indicate components, assembly, dimensions, weights and loading, required clearances, and location and size of field connections. Include schematic layouts showing condenser, refrigeration compressors, cooling coils, refrigerant piping and accessories required for complete system.
- B. Product Data: Submit rated capacities, weights, accessories, electrical requirements, and wiring diagrams.
- C. Manufacturer's Certificate: Certify products meet or exceed specified requirements.
- D. Manufacturer's Field Reports: Submit start-up report for each unit.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit start-up instructions, maintenance instructions, parts lists, controls, and accessories.

1.5 QUALITY ASSURANCE

- A. Construction and Ratings: In accordance with ARI 210/240, UL 207. Testing in accordance with ASHRAE 20.
- B. Performance Ratings: Energy Efficiency Ratio (EER) not less than prescribed by ASHRAE 90.1 when tested in accordance with ARI 210/240 .
- C. Perform Work in accordance with State of New York standard.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years documented experience.

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1.7 DELIVERY, STORAGE, AND HANDLING

- A. Comply with manufacturer's installation instruction for rigging, unloading and transporting units.
- B. Protect units on site from physical damage.

1.8 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.9 MAINTENANCE SERVICE

- A. Include systematic examination, adjustment, and lubrication of unit, including fan belt replacement, and controls checkout and adjustments. Repair or replace parts in accordance with manufacturer's operating and maintenance data. Use parts produced by manufacturer of original equipment.
- B. Perform work without removing units from service during building normal occupied hours.
- C. Maintain locally, near Place of the Work, adequate stock of parts for replacement or emergency purposes. Have personnel available to ensure fulfillment of this maintenance service, without unreasonable loss of time.

1.10 EXTRA MATERIALS

- A. Furnish two sets of fan belts.

1.11 MANUFACTURER WARRANTY

- A. Provide one-year warrantee for equipment, materials, and labor. Manufacturer's warrantee shall be provided for equipment including 5-year warrantee for the refrigeration compressors. Other components within the units shall have two (2) year warranty. Warranty period starts at the Substantial Completion of the work.

PART 2 PRODUCTS

2.1 CONDENSING UNITS

- A. Manufacturers:
 - 1. The Trane Co.

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2. Carrier
 3. McQuay
 4. Or approved equal
- B. Product Description:
1. Packaged, factory assembled, pre-wired unit, suitable for outdoor use consisting of casing, condensing coil and fans, integral sub-cooling coil, liquid accumulator screens, and controls.

2.2 HOUSING

- A. House components in welded steel frame with galvanized steel panels with weather resistant, baked enamel finish.
- B. Mount starters, disconnects, and controls in weatherproof panel with full opening access doors. Furnish mechanical interlock to disconnect power when door is opened.
- C. Furnish removable access doors or panels with quick fasteners.
- D. Furnish welded steel floor mounting stand and duct collars at coil inlet and fan outlet.

2.3 CONDENSER COILS

- A. Coils: Aluminum fins mechanically bonded to seamless copper tubing. Furnish sub-cooling circuits as applicable. Air test under water to 425 psig (2900kPa), and [vacuum] dehydrate. Seal refrigerant.
- B. Coil Guard: Louvered with lint screens.
- C. Configuration: Single refrigeration circuit or dual Two refrigeration circuits for larger capacities.

2.4 FANS AND MOTORS

- A. Vertical discharge belt driven propeller type condenser fans with fan guard on discharge, equipped with roller or ball bearings with grease fittings extended to outside of casing.
- B. Weatherproof motors suitable for outdoor use, single phase permanent split capacitor or 3 phase, with

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permanent lubricated ball bearings and built-in current and thermal overload protection.

2.5 CONTROLS

- A. Factory wired and mounted control panel, NEMA 250 Type 4 enclosure, containing fan motor starters, fan cycling thermostats, head pressure controls, compressor interlock and control transformer.
- B. Furnish thermostat to cycle fan motors in response to outdoor temperature.
- C. Furnish head pressure switch to cycle fan motors in response to refrigerant condensing pressure.
- D. Furnish solid state control to vary speed of one condenser fan motor in response to refrigerant condensing pressure.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install in accordance with ASHRAE 15.
- B. Install refrigerant piping from unit to condensing unit. Install refrigerant specialties Install connection to electrical power wiring in accordance with Section 26 05 22.

3.2 MANUFACTURER'S FIELD SERVICES

- A. Furnish cooling season start-up and winter season shutdown service, for first year of operation. If initial start-up and testing takes place in winter and machines are to remain inoperative. Repeat start-up and testing operation at beginning of first cooling season.

3.3 DEMONSTRATION AND TRAINING

- A. Demonstrate starting, maintenance, and operation of unit.

END OF SECTION

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SECTION 237313
AIR HANDLING UNITS

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Division 23

1.02 SUBMITTALS

- A. Product Data:
1. Catalog sheets, brochures, performance charts, standard schematic drawings, specifications and installation instructions for each air handling unit.
- B. Quality Control Submittals:
1. Copy of Seismic Qualifications Certificate.
- C. Contract Closeout Submittals:
1. Operation and Maintenance Data: Deliver 2 copies, covering the installed products, to the Commissioner.

1.03 QUALITY ASSURANCE

- A. Source Quality Control: Factory test units in accordance with ARI Standard 430 - Central-Station Air-Handling Units.
- B. Detailed description of equipment anchorage devices on which the certification is based including installation requirements.

1.04 WARRANTY

- A. Provide manufacturer's guarantee for a two year period. The guarantee period shall start at Substantial Completion.

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PART 2 PRODUCTS

2.01 AIR HANDLING UNITS

- A. General Design: Sectional constructed unit which is structurally self supporting, gasketing between adjoining sections, sections consisting of:
1. Fan section.
 2. Coil section(s).
 3. Mixing box and filter section.
 4. Base Rail.
 5. Accessory sections as indicated on drawings.
- B. Casing:
1. Gage:
 - a. Double Wall Exterior: Minimum No. 18 USS sheet steel.
 - b. Double Wall Interior:
 - 1) Solid: Minimum No. 22 USS sheet steel.
 - 2) Perforated: Minimum No. 18 USS sheet steel.
 - a) Perforation located in fan section for acoustics.
 2. Accessibility:
 - a. Removable panels and insulated double wall inspection doors to all internal parts.
 - b. Inspection Doors:
 - 1) Exterior: Minimum No. 18 USS sheet steel.
 - 2) Interior: Minimum No. 20 USS sheet steel.
 - 3) Minimum 1 inch thick unexposed insulation.
 - 4) Continuously gasketed perimeter.
 - 5) Stainless or chrome plated steel hinges.
 - 6) Two latching handles.
 - c. Sections shall maintain structural integrity upon removal of panels.
 3. Unit Insulation:
 - a. Double Wall: Minimum 2 inch thick insulation material.
 - b. Insulation minimum 1-1/2 pound density.
 - c. No insulation edges exposed.
 - d. Materials: Comply with requirements of NFPA Bulletin 90A.
- C. Fan Section:

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1. Fan: Double width, double inlet, multi-blade centrifugal type, designed for low operating speeds.
 2. Fan Shaft: Factory coated with corrosion preventive compound.
 3. Shaft Bearings: Grease packed ball or sleeve type, sealed in self-aligning pillow blocks.
 4. Motor: Mounted internally or externally.
 - a. Adjustable motor base.
 - b. Adjustable sheave V-belt drive.
 - c. Belt Guard (For external only).
 - d. See Section 262419 - MOTOR AND MOTOR CONTROLLERS.
 5. Vibration Isolation:
 - a. Internally Mounted Motor: Spring isolators by manufacturer.
 - b. Externally Mounted Motor: See Section 230549 - VIBRATION ISOLATION.
 - c. Flexible connection between fan and casing.
- D. Coil Section:
1. Seamless copper or red brass tubing, leak tested at minimum 200 psig air pressure under water.
 2. Aluminum flat plate fins with formed collar permanently bonded to tubing by means of mechanical expansion.
 3. Coil header(s) of cast iron, copper or steel.
 4. Built in pitch between headers, or pitch coils to permit drainage. Extend drainage connections to exterior of unit casing.
 5. Gasketing or safing to prevent air by-pass or infiltration between coil channels, finned surfaces, and casing.
 6. Easy top of side removal of coil(s) without disassembly of adjacent coil(s) or coil section.
- E. Condensate Drain Pan:
1. Insulated double wall galvanized steel construction.
 2. Sloped to drain connection.
 3. Inspection door to allow for cleaning.
 4. Separate drain pans for each tier of cooling coils.
- F. Filter Section:
1. Easy filter removal and replacement.
 2. Flat, V or Z pattern arrangement.
 3. Filter Type:

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- a. 2 inch pleated.
- G. Mixing Box:
- 1. Mixing box or combination filter and mixing box.
 - 2. Damper opposed or parallel multi-airfoil blades for:
 - a. Control of outdoor and recirculated air.
 - b. Prevention of air stratification.
 - 3. Maximum damper leakage rate 20 cfm/sq ft @ 4.0 in wg.
 - 4. Damper bearings or bushings; stainless or nylon.
 - 5. Jamb and blade edge seals.
- H. Factory Finish:
- 1. All Exposed Surfaces: Factory applied baked enamel, or galvanized finish in accordance with ASTM A 653, coating designation G90.
- I. Base Rail: Factory installed by manufacturer.
- 1. Minimum 6 inch height (to elevate condensate drain).
 - 2. Galvanized steel.
 - 3. Structurally capable of supporting unit on floor or by ceiling suspension.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install the Work of this Section in accordance with the manufacturer's printed instructions.

END OF SECTION

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SECTION 238106
COMMERCIAL PACKAGED ROOFTOP HEATING AND COOLING UNITS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide packaged commercial type rooftop heating and cooling units as specified herein, as shown on the Drawings and as needed for a complete and proper installation. Product specific requirements are contained herein; Section 230501, Basic HVAC Requirements, shall be referred to for general requirements.

1.02 RELATED SECTIONS

- A. Division 23 Sections
B. Division 26 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Include with the shop drawings mounting details for securing and flashing roof curb and/or duct penetrations to roof structure. Indicate coordination requirements with roof membrane system.
- B. Wiring Diagrams: Submit manufacturer's electrical requirements for power supply wiring to packaged heating and cooling units by the Contractor. Submit manufacturer's wiring diagrams for interlock and control wiring required for final installation of packaged heating and cooling units and controls. Clearly differentiate between portions of wiring that are factory-installed and portions to be field-installed by the Contractor.
- C. Provide control devices. All digital controls shall be able to function in a stand alone mode without any network connections.
- D. Piping Diagrams: Submit manufacturer's gas piping requirements for fuel supply piping for packaged rooftop units. Submit manufacturer's diagrams for final installation of package rooftop units. Clearly indicate field tie in points and capacity requirements.
- E. Coordination Drawings: Rooftop units to roof-curb mounting details drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved: size and location of rooftop unit mounting rails and anchor points and methods for anchoring units to roof curb or dunnage; required roof penetrations for ducts, pipes, and electrical raceways, including size and location of each penetration.

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- F. Manufacturers' test results.
- G. Operation and Maintenance Data to include in emergency, operation, and maintenance manuals; and the maintenance data specified in Section 230501.
- H. Video recordings produced during the training.
- I. Contractor's start-up and demonstration affidavit.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

A. Codes and Standards

1. ARI Compliance: Provide capacity ratings for packaged heating and cooling units in accordance with ARI Standard 360: Standard for Commercial and Industrial Unitary Air-Conditioning Equipment.
2. Refrigeration system shall be constructed in accordance with ASHRAE 15-2001: Safety Standard for Refrigeration Systems as modified by NYC Mechanical Code Chapter 11.
3. Refrigeration equipment shall be listed and labeled to UL 1995-1998. UL listing shall be indicated on the Shop Drawings.
4. Packaged rooftop units shall comply with the EER requirements of the 2007 edition of the New York State Energy Conservation Construction Code, ARI 340/360, and ASHRAE 90.1-2004.
5. All appliances regulated by the New York City Construction Codes shall be listed and labeled (reference MC 301.4, MC 301.6). Testing of material and equipment shall be in accordance with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department (MEA) before the effective date of the NYC Construction Codes may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.

- B. Before submitting any equipment shop drawings for approval, the Contractor and the Equipment Vendor and Manufacturer

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shall coordinate the controls required for the system.

1.05 COORDINATION

- A. Coordinate size, location, and installation of rooftop unit curbs and dunnage supports with roof installer.

1.06 MANUFACTURER WARRANTY

- A. Provide written warranty signed by manufacturer, agreeing to replace/repair motors/compressors that have inadequate and defective materials and workmanship including leakage, breakage, improper assembly, or failure to perform as required, within the warranty period. All warranties shall start at the Date of Substantial Completion. Five-(5) year warranty shall be provided for the refrigeration compressors. Other components within the rooftop units shall have a two-(2) year warranty.

1.07 ATTIC STOCK

- A. Provide with each unit, one spare set of air filters. Suitable box and label spare as to their usage. Provide also spare belts for belt-driver equipment.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Provide rooftop air conditioners with gas fired heating, air-cooled, direct expansion refrigeration for cooling. Units shall be weatherproof and designed for outside mounting on a roof. Units shall supply the conditioned air and return the required air as shown on the Drawings. Condenser fan/coil section shall be designed with vertical or horizontal discharge as shown on drawings.

2.02 COMMERCIAL ROOFTOP UNITS

- A. Roof top unit gas fired heating and electric cooling: Factory assembled, piped, internally wired, fully charged and factory tested; designed for exterior installation; consisting of compressor, indoor and outside refrigerant coils, R-407C or R-410A refrigerant charge, supply fan, return or relief fan (when required), outside coil fan, gas burner, electronic refrigeration, operating controls, filters, and dampers. The equipment manufacturer shall provide auxiliary heating/cooling for the control panel enclosure and/or vestibule if required to guarantee that the required controller operating environmental conditions are provided during all occupied and unoccupied cycles when the equipment cycles intermittently to meet the setback/setup conditions.

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- B. Casing: Galvanized-steel construction with enamel paint finish, removable panels or access doors with neoprene gaskets for inspection and access to internal parts, ½" minimum thermal insulation thickness, knockouts for electrical and piping connections, exterior condensate drain connection, and lifting lugs. All gas piping and electric power shall enter the unit cabinet at a single location.
For units greater than 20 tons, provide double-wall galvanized sheet metal construction with minimum 1-inch thick thermal insulation, with perforated-metal liner.
- C. Supply and Return/Relief Fans: Forward curved, centrifugal, belt driven with adjustable motor sheaves, grease-lubricated ball bearings and motor.
- D. Outside Coil Fan: Propeller type, directly driven by permanently lubricated motor.
- E. Refrigerant Coils: Aluminum-plate fin and seamless copper tube in steel casing with equalizing-type vertical distributor. Provide corrosion-protection coating to both coils.
- F. Compressor: Hermetic reciprocating or scroll compressor (15 HP max) with integral vibration isolators, internal overcurrent, overtemperature protection, internal pressure relief and crankcase heater. Provide label in compressor section indicating rated horsepower and kilowatt equivalent for each compressor.
- G. Refrigerant System: Compressor(s); Outside coil and fan; Inside coil and fan; Expansion valves with replaceable thermostatic elements; Refrigerant dryers; High-pressure switches; Low-pressure switches; Thermostats or sensors for coil freeze-up protection during low-ambient temperature operation or loss of air; Brass service valves installed in discharge and liquid lines; Hot-gas bypass; factory-installed capacity modulating valves; Timed off control; automatic-reset control shuts compressor off after five minutes.
- H. Filters: The filter section shall include UL Class 2, 2" thick, with pleated type filter, with a minimum efficiency of MERV 7. Filters shall be selected for a velocity not to exceed 500 fpm. Filters shall comply with UL 900-1994.
- I. Heat Exchanger: Aluminized-steel construction for natural gas-fired burners with the following controls: redundant dual gas valve with manual shutoff, direct-spark pilot ignition, electronic flame sensor, induced-draft blower and flame rollout switch. All burner operating and safety controls shall be provided by the rooftop unit manufacturer. Provide gas train in accordance with the guidelines of GE Global Asset Protection Services (formerly

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IRI). Provide internal gas pressure regulators equipped with vent piping leading to the exterior of the rooftop unit enclosure unless constructed or equipped with a vent limiting means to limit the escape of gas from the vent opening in the event of diaphragm rupture. Provide manual reset high and low gas pressure switches with vent piping leading to the exterior of the rooftop unit enclosure unless constructed or equipped with a vent limiting means to limit the escape of gas from the vent opening in the event of diaphragm rupture. All vent piping shall be 1" minimum diameter, standard weight schedule 40 black steel pipe. All vent piping shall be caulked where it penetrates the unit exterior skin. All gas vents shall be equipped with a utility approved weatherproof cap that has an insect resistant screen. All vents shall terminate at least 10' away from any chimney and shall terminate at least 10' laterally from any building opening, window, door or ventilation air intake.

Gas vents from high and low gas pressure switches may be manifolded with the vents for the gas pressure regulator. Manifolded atmospheric vent lines shall be connected to a common vent line having a cross sectional area not less than the area of the largest vent plus 50 percent of the combined area of all the additional vents with allowance for length of run and fittings.

The unit manufacturer factory engineer shall supervise final adjustments. The unit manufacturer shall also provide technical support from the burner manufacturer at startup of the unit for supervision.

Per NYC Fuel Gas Code 403.9.3, gas piping joints and connections shall be approved and of a type approved for natural gas piping systems. All threaded joints and connections shall be made tight with suitable lubricant or pipe compound. Pipe joint compounds and thread seal tape that utilize Teflon (PTFE) shall be approved for usage on natural gas lines.

- J. Economizer: Return and outside-air dampers with neoprene seals, outside-air filter, and hood.
1. Damper Motor: Fully modulating spring return with adjustable minimum position.
 2. Control: Electronic-control system uses outside-air temperature to determine economizer cycle.
 3. Relief Damper (where applicable): Power actuated with bird screen and hood.

Outside air, return air, and exhaust air (where applicable) dampers shall have factory mounted fast acting spring return Belimo or approved equal, damper actuators. Outside

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air intake dampers and spill exhaust dampers shall be normally closed. Return air damper shall be normally open. Outside air intake dampers and spill exhaust dampers shall close when the fans stop.

- K. Power Connection: Provide for single connection of power to unit with unit-mounted disconnect switch accessible from outside unit and control-circuit transformer with built-in circuit breaker. All unit power wiring shall enter the unit cabinet at a single location.
- L. The unit control system shall include all required temperature and pressure sensors, input/output boards, transformers, main microprocessor and operator interface and shall perform all unit control function and safeties. Field controls (space thermostats or sensors, outside temperature thermostats or sensors, etc.) shall be furnished and installed by Contractor.
- M. Accessories:
1. Cold-Weather Kit: Electric heater maintains temperature in gas burner compartment.
 2. Condensate drain trap.
 3. Hail guards of steel, painted to match casing
 4. Vertical vent extension
- N. Roof Curb: Steel with corrosion-protection coating, gasketing, and factory-installed wood nailer; complying with NRCA standards; height as required by the manufacturer. Curbs shall be compliant with those defined in Section 230549.
- O. Approved Manufacturers
- Carrier Corp.
McQuay International
Trane
YORK International Corporation.
- P. Fire Alarm Interface Requirements: The packaged rooftop unit shall have manual reset ionization type smoke detectors factory mounted and wired in the supply and return openings to the unit as required by the NYC Construction Codes and NYC Electrical Code. Upon detection of smoke, a signal shall be sent to the building fire alarm system and the fans shall stop. Interlock shall be coordinated by the Contractor.

The packaged rooftop unit shall have terminal strips and interlocking relays factory mounted and wired to interlock with other components of the building. It is the

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responsibility of the contractor to advise the manufacturer of requirements for additional interlocks not covered in this specification.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install packaged heating and cooling units in accordance with manufacturer's installation instructions. Install units plumb and level, firmly anchored in locations indicated, and maintain manufacturer's recommended clearances.
 - 1. The roof curb shall be designed to mate with the unit and provide support and a watertight installation when installed properly. The roof curb design shall allow field-fabricated rectangular supply/return ductwork to be connected directly to the curb. Curb design shall comply with NRCA requirements. Curb shall be shipped knocked down for field assembly and shall include wood nailer strips.
- B. Electrical Wiring: The Contractor shall install electrical devices furnished by manufacturer but not specified to be factory-mounted. Furnish copy of manufacturer's wiring diagram submittal to Electrical.
 - 1. Verify that electrical wiring installation is in accordance with manufacturer's submittal and installation requirements of Division-26 Sections. Do not proceed with equipment start-up until wiring installation is acceptable.
- C. Ductwork: Refer to Section 233113: Metal Ductwork. Connect supply and return ducts to unit with flexible duct connections. Provide transitions to exactly match unit duct connection size.
- D. Gas Piping: Connect gas supply piping to unit as indicated on the drawings with unions and shutoff valves.
- E. Drain Piping: Connect primary unit drain to nearest indirect waste connection. Provide trap at primary drain pan.
- F. For curb mounted units, per MC 307.2.3, the Contractor shall provide a auxiliary drain pan and associated drain line for each DX evaporator coil (when the unit is curb mounted, not dunnage mounted) to avoid damage to any building component as a result of overflow from the primary equipment drain pan or stoppage in the primary condensate drain piping.

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3.02 SIGNS, NAMEPLATES AND OPERATION AND EMERGENCY SHUTDOWN INSTRUCTIONS

- A. Signs, nameplates, and operation and emergency shutdown instructions for refrigeration systems shall comply with the following (per MC 1101.11):
1. Sections 9.15, 11.2.1, 11.2.2 and 11.7 of ASHRAE 15-01 as identified below.
 2. Each refrigeration unit or system shall be provided with a nameplate indicating the "rated" horsepower of the prime mover or compressor and the equivalent of such horsepower in kilowatts.
- B. Per ASHRAE 15-01 Section 9.15: Nameplate: Each unit system and each separate condensing unit, compressor, or compressor unit sold for field assembly in a refrigerating system shall carry a nameplate marked with the manufacturer's name, nationally registered trademark or trade name, identification number, the design pressures, and the refrigerant for which it is designed by the refrigerant number (R number as shown in Table 1 of ASHRAE 15-01). If the refrigerant is not listed in Table 1 of ASHRAE 15-01, the refrigerant shall be designated in accordance with ANSI/ASHRAE 34.

3.03 FIELD QUALITY CONTROL

- A. Start-up packaged heating and cooling units, in accordance with manufacturer's start-up instructions and in the presence of a manufacturer's representative. Test controls and demonstrate compliance with requirements. Replace damaged or malfunctioning controls and equipment. Contractor shall submit written affidavit indicating that the equipment is operating as designed. The Contractor shall test the control system and demonstrate compliance with the requirements of the Specifications to the satisfaction of the Commissioner. The Contractor shall perform necessary Interdisciplinary Tests and Functional Performance Tests according to the manufacturer's procedures.

3.04 DEMONSTRATION

- A. Provide services of manufacturer's technical representative for two days to instruct the City of New York and building manager in the operation and maintenance of the packaged heating and cooling units.
- B. Schedule training with the City of New York. Provide at least 2-days notice of training date to the Commissioner and building manager.

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- C. All training shall be video recorded. Submit videos to the Commissioner within 48 hours of the completion of training. Obtain receipt that the videos have been delivered and furnish receipt to the City of New York.

3.05 INTERDISCIPLINARY TESTS AND FUNCTIONAL PERFORMANCE TESTS

- A. Interdisciplinary Pre-Start-Up and Start-Up Tests:

The Contractor shall conduct interdisciplinary pre-start up and start up tests as per the manufacturer's start up procedures. Contractor shall submit signed start up affidavit signed by the factory authorized service representative indicating that all of the manufacturer's pre-start up and start up procedures have been successfully completed.

- B. Functional Performance Tests:

Contractor shall also submit signed functional performance testing affidavit signed by the factory authorized service representative indicating that all of the manufacturer's functional performance tests have been successfully completed.

END OF SECTION

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SECTION 260501
GENERAL PROVISIONS FOR ELECTRICAL WORK

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Provide labor, materials, tools, machinery, equipment, and services necessary to complete the Electrical Work under this Contract. All systems and equipment shall be complete in every aspect and all items of material, equipment and labor shall be provided for a fully operational system and ready for use. Coordinate the work with the work of the other trades in order to resolve all conflicts without impeding the job progress.
- B. When an item of equipment is indicated on a floor plan and not shown on associated riser diagram or vice-versa, the Contractor shall provide said item and all required conduit and wiring connections for a complete system as part of the Contract.

1.02 EXAMINATION OF SITE

- A. The Contractor shall be held to have examined the site and to have compared it with the Drawings and Specifications, and deemed to have been satisfied as to the conditions existing at the site, as relating to the actual conditions of the site at the time estimating the Work, the storage and handling of materials, and all other matters as may be incidental to the Work under the Contract, before bidding, and no allowance will subsequently be made to the Contractor by reason of any error due to the Contractor's neglect to comply with the requirements of this clause.

1.03 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract.

1.04 ELECTRICAL EQUIPMENT

- A. All electrical equipment shall be the latest of the current year in design, material and workmanship, and shall be the type or model called for in these Specifications.
- B. If the type or model specified has been superseded by a later type or model, the latest shall be submitted for approval and shall be provided as part of the Contract.

1.05 SUBMITTALS

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Provide as outlined in each individual section of these Specifications, including but not limited to:

- A. Product Data: Submit manufacturer's product data for equipment including capacity, performance charts, test data, materials, dimensions, weights, and installation instructions.
- B. Shop Drawings: Submit manufacture's shop drawings indicating dimensions, weight loading, required clearances, location, and method of assembly of components.

Submittals are mandatory as noted in the respective specifications. Schedules, installation instructions, startup manuals, operation and maintenance manuals, and shop drawings are always required to be submitted.

- C. Samples
- D. Special Warranty
- E. Quality Assurance submittals
- F. Operation and Maintenance Manuals
- G. Test results and certificates
- H. Manuals and video tape of the personnel training.

1.06 COORDINATION DRAWINGS

- A. Provide coordination drawings. Coordination drawings shall be completed so as not to delay the progress of the Project.

1.07 BUREAU OF ELECTRICAL CONTROL

- A. Drawings and Specifications:
 - 1. The Contract Drawings and Specifications shall be submitted by the Contractor to the Bureau of Electrical Control to facilitate any inspections that may be made by that agency.
 - 2. It is the intent of these Specifications that all electric work shall be done in strict accordance with the rules of the New York City Electrical Code 2007. Where the requirement of the Drawings or Specifications exceeds the requirements of the Electrical Code, the requirements of the Drawings and Specifications shall be binding upon the Contractor.

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3. Should the Bureau of Electrical Control inspect the work and issue a violation, the Contractor shall correct the Work and eliminate the violation as part of the Contract.

B. Interpretation

1. The electric work detailed in these Specifications and shown on Drawings shall be under the jurisdiction of the Commissioner, subject to the approval of the Bureau of Electric Control.
2. The Commissioner shall be the sole source for interpretation of the Contract Documents. Any discrepancies or conflicts shall be brought to the attention of the Commissioner for clarification.

- C. Materials and Appliance:** All materials and appliance shall be approved by the Commissioner and installed in accordance with the rules and regulations of the Building Department, Bureau of Electrical Control; certificates of approval including the temporary light and power wiring, shall be obtained by the Contractor and delivered to the Commissioner before the Work is finally accepted.

1.08 WORK IN EXISTING BUILDINGS

- A. The Contractor is referred to General Conditions for General Requirements of Work in Existing Structures which shall apply to the Work of the Contract.
- B. Existing material, fixtures, and equipment which have been removed shall not be used again unless specifically required by the Drawings or Specifications.
- C. Removals, Replacements, Adjustments
 1. The Contractor shall remove, relocate, replace, adjust or adapt, all existing conduit, wiring and other electric equipment or apparatus, as required, to provide a complete installation.
 2. The Work shall include, providing all materials, all necessary extensions, connections, cuttings, repairing, adapting and other Work incidental thereto, together with such temporary connections as may be required to maintain service pending the completion of the permanent Work. All Work shall be left in good working order and in a condition equal to the adjacent new or existing Work.

D. Care in Removing Existing Conductors

1. The Contractor shall use due care and diligence in removing existing conductors from existing conduits in order to prevent conductors from breaking and becoming an irretrievable obstruction within the conduits.

E. Cutting and Repairing

1. Whenever the cutting, or drilling, or removal of any part of the structure (ceilings, walls, floors, shelving, bookcases, partitions, etc.), is required in order to remove, relocate, alter or install any article of electrical equipment (including conduits, boxes, fittings, etc.), the Contractor shall perform all cutting, drilling, etc., and remove the section of structure required. After removal and installation of the electric equipment, the Contractor shall repair the section of structure, as directed by the Commissioner, with new materials, equal to that of adjacent structure of the same type.

Note that in general, all holes through existing structures for conduit installation shall be core drilled, unless prior written approval is provided by the Commissioner.

2. Whenever holes are cut in fire-rated walls or floor slabs in order to permit the installation of conduit or electrical equipment, these holes shall be repaired with material that will restore the fire rating of the wall or floor slab to its original condition.
3. The Contractor shall paint all repaired areas of the building. The paint shall match the paint of adjacent surface areas, or extend to the nearest architectural break-line, as directed.
4. Wherever any part of the structure is marred or damaged, the Contractor shall repair the damaged or marred areas of the structure.
5. Where a piece of electrical equipment is removed, the Contractor shall finish that part of the surface to match surroundings.

- F. Damaged Apparatus: Should any damage, due to the execution of this Contract, occur to the furniture, fixtures, or any equipment or apparatus, such damage shall be properly repaired and/or replaced by the Contractor without charge.

G. Non-Interruption of Services

1. It is imperative that all existing services (electric, light, power, fire alarm, telecommunications, etc.) be kept in operation at all times, unless prior written approval is received from the Commissioner.
2. Provide fire watch services, as necessary, during disruption of fire alarm system.

1.09 TESTS

- A. The Contractor shall demonstrate to the City of New York operation of all equipment and systems. All tests shall be completed to the satisfaction of the Commissioner. Each test shall be performed as indicated in the individual specification section.

1.10 GUARANTEES, WARRANTIES, BONDS, AND MAINTENANCE CONTROL

- A. Refer to General Conditions for procedures and submittal requirements for warranties. Refer to individual equipment specifications for warranty requirements.
1. Compile and assemble the warranties specified for Electrical work into a separated set of documents, tabulated and indexed for easy reference.
 2. Provide complete warranty information for each item to include product or equipment including duration of warranty or bond; and names, addresses, and telephone numbers and procedures for filing a claim and obtaining warranty services.
 3. Warranties for the equipment, workmanship and materials should be provided for the period of one year with the exception of the warranty on the refrigeration compressors. Five- (5) years warranty shall be provided for the refrigeration compressors.
 4. Manufacturers', in addition to Contractors' warranties, shall be provided for all Electrical equipment and accessories.
 5. All warranties are to start from the date of Substantial Completion.

1.11 OPERATIONS, TRAINING, AND MAINTENANCE MANUALS

- A. General

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Refer to General Conditions for procedures and requirements for preparation and submittal of operation and maintenance manuals for each equipment. Refer to individual equipment specifications for additional requirements. In addition, include the follow information:

1. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of all replaceable parts.
 2. Manufacturer's printed operating procedures to include start-up, break-in, routine and normal operating instructions; regulation, control, stopping, shut-down, and emergency instructions; and summer and winter operating instructions.
 3. Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassemble; aligning and adjusting instructions.
 4. Servicing instructions and lubrication charts and schedules.
- B. Bind all the other Sections maintenance manuals in a single final Operating and Maintenance Manual.
- C. Refer to Section Division 1 Sections for procedures and requirements for training on each equipment. Refer to individual equipment specifications for the additional training requirements.
- D. Contractor shall videotape all the training sessions for various equipment and systems as specified in individual sections of these Specifications. If a manufacturer's particular equipment item is furnished with a training video, the manufacturer's video shall be provided in addition to the requirements of this Section, not in lieu thereof and at no additional cost to the HSA. Contractor shall be responsible for providing informative videotapes covering all the materials and content outlined in each individual section of these Specifications.

1.12 CLEANING AND REPAIR

- A. On completion of installation, inspect interior and exterior of installed equipment. Remove paint splatters and other spots.

Vacuum dirt and debris; do not use compressed air to assist in

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cleaning. Repair exposed surfaces to match original finish.

- B. Contractor shall not leave sharp exposed metal edges (bottom of threaded rods, electrical equipment supports, etc.) that could otherwise present safety hazards to the building's occupants/work staff.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 260522
WIRING SYSTEMS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

Install all conductors as required for the proper operation of the various systems specified. All connections shall be made complete, and all systems shall be energized and tested for proper operation.

1.02 QUALITY ASSURANCE

- A. Wire manufactured over one year prior to delivery to the site will not be accepted.
- B. Tapes for splices or termination shall be dated by the tape manufacturer to indicate that they have been manufactured no longer than six months prior to use in the Work of this Section.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. Conductors shall be delivered at the building in original packages or on reels, and shall have the tag of the manufacturer attached thereto indicating: Contractor's name, Project title and number, Date of manufacturing.
- B. Store material in a clean, dry space and protect from weather.

1.04 SUPPLEMENTAL SUBMITTALS

- A. Submit a Product Schedule indicating the item description and manufacturer name. The Schedule will be accepted by the BPL representative for record purposes only, provided that the items are in full compliance with the Specifications.
- B. Certificates

Provide affidavit stating that all items used are UL listed and meet the specifications.
- C. Submit field test results for wires and cables, including "Megger" readings with the method used.

PART 2 - PRODUCTS

2.01 WIRES AND CABLES

A. General

1. Conductors shall conform to A.S.T.M. and I.P.C.E.A. standards, and be UL listed and labeled.
2. Conductors shall have 600 volts insulation and shall be of soft-annealed-uncoated copper of 98% conductivity. Copper clad conductors are not acceptable.
3. All conductors shall have identifiable lettering on the insulator jacket as to voltage rating, wire type, A.W.G. size, insulation, and manufacturer I.D.

B. Wire Description

1. Type THHN/THWN: 75°C, THHN: 90°C shall have a thermoplastic polyvinyl chloride insulation with nylon jacket for 600 volts, and shall comply with ASTM, IPCEA S-61-402 (latest edition) and NEMA WC5 (latest edition).
2. TFFN (stranded) shall be thermoplastic insulated, jacketed by abrasion and oil resistant nylon, rated at 105°C.
3. Metal Clad Cable (Type MC) shall be a factory assembly of conductors, each insulated and enclosed in a metallic flexible interlocking metal tape armor of galvanized steel or aluminum. A bare internal grounding conductor shall be included and insulated from the outer metal armor. All conductors, including grounding conductor, shall be a minimum of #12 AWG. The assembly shall be UL listed and rated 600 volts, 90°C.
4. Mineral Insulated Cable (type MI) shall consist of one or more solid copper conductors insulated with highly compressed magnesium oxide and enclosed in a continuous copper sheath. The MI cable shall be rated at 600V. The MI cable sheath shall be grounded. MI cable shall be 2 hours fire rated.

2.02 SPLICES AND TERMINATIONS

A. General

1. All materials for making splices and terminations shall be specifically designed for use with the type of wire, the cable insulation, the installation and the operating conditions of the specific application and be UL listed.

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2. Grounding conductors and bonding jumpers shall be connected by exothermic welding, listed pressure connectors, listed clamps, or other listed means.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Prior to pulling wires and cable, clean raceway systems of all foreign matter and perform all operations necessary so as not to cause damage to wires and cables while pulling.

3.02 INSTALLATION

- A. General
 1. Use approved lubrication when installing cables in conduits and raceways. Any pulling compounds shall be compatible with the finish of the wires and cables furnished.
- C. Type THHN/THWN wire
 1. Feeder and Branch Circuits
 2. Remote-Control Signaling and Power-Limited Circuits: - Circuit Classes 1, 2 or 3, unless otherwise indicated.
- D. Type MC Cable - Use in concealed installation of hung ceiling and gypsum board for:
 1. Lighting Branch circuit.
 2. Power branch circuit.
- E. Type MI Cable (Mineral-Insulated Cable) - Use where required by code. Install as per manufacturer instruction.
- F. Lighting Fixture Wires
 1. For wiring within lighting fixtures only, where sizes #14 AWG or smaller is required, use Type TFFN.
- G. Identifications of Wires and Cables
 1. Each wire and cable shall be identified by its circuit in all cabinets, boxes, manholes, handholes, wireways and other enclosures and access locations, and at all terminal points.
- H. Terminations

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1. For Conductor Sizes Larger Than Terminal Capacity On Equipment: Reduce the larger conductor to the maximum conductor size that terminal can accommodate (reduce section no longer than 1 ft.). Cutting of cable strands to fit terminal is not acceptable.

3.03 FIELD TESTS

- A. Test all feeder cables installed under the Contract with a 1000-volt Megohmmeter. Furnish the Commissioner with a copy of the "Megger" test report, together with an outline of the method used. Any cable not attaining the minimum reading established in the code shall be replaced.

3.04 COMMON NEUTRAL CONDUCTOR

- A. A common neutral may be used for 2 or 3 branch circuits where the circuits are indicated on the Drawings to be enclosed within the same raceway, provided each branch circuit is connected to different phase busses in the panelboard.
- B. Exceptions - The following circuits shall have a separate neutral:
 1. Circuits containing ground fault circuit interrupter devices.
 2. Circuits containing solid state dimmers.
 3. Circuits for computers, peripherals and related equipment.
 4. Circuits recommended by equipment manufacturers to have separate neutrals.

3.05 EQUIPMENT GROUNDING CONDUCTOR

Note that equipment-grounding conductors are not shown on the Contract Drawings but it shall be provided when and as required by code.

END OF SECTION

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SECTION 260523
ELEVATOR WIRING

PART 1 GENERAL

1.01 REFERENCES

- A. NEMA, ASME, and UL.

PART 2 PRODUCTS

2.01 RACEWAYS, FITTINGS AND ACCESSORIES

- A. Rigid Ferrous Metal Conduit: Steel, galvanized on the outside and enameled on the inside or hot dipped galvanized on the outside and inside, UL categorized as Rigid Ferrous Metal Conduit (identified on UL Listing Mark as Rigid Metal Conduit - Steel or Rigid Steel Conduit), by Allied Tube & Conduit Corp., Midwest Electric, Occidental Coating Co., Robroy Industries Inc., Steelduct Conduit Products, Triangle PWC Inc., or Wheatland Tube Co.
- B. Flexible Metal Conduit: Galvanized steel strip shaped into interlocking convolutions, UL categorized as Flexible Metal Conduit (identified on UL Listing Mark as Flexible Steel Conduit or Flexible Steel Conduit Type RW), by American Flexible Conduit Co., Cerro Conduit Co., Ettco Wire and Cable Corp., or International Metal Hose Co.
- C. Liquidtight Flexible Metal Conduit: Anaconda Metal Hose Anamet Inc.'s Sealtite Type UA, Electri-Flex Co.'s Type LA Liguatite, Flexible Technology Corp.'s Type UA, or Universal Metal Hose Co.'s Universal Sealflex - U.
- D. Wireways, Fittings and Accessories: 16 gage minimum, screw cover, by Hoffman Engineering Co., Keystone/Rees Inc., or Square D Co.
- E. Insulated Bushings: By Appleton Electric Co., Efcor Inc., OZ/Gedney Co., or Thomas & Betts Corp.
- F. Connectors and Couplings:
1. Couplings (For Rigid Metal Conduit): Standard threaded couplings as furnished by conduit manufacturer.
 2. Flexible Metal Conduit Connectors: Midwest Electric Mfg. Corp.'s 1708, 1736 Series, OZ/Gedney Co.'s C-8T, 24-34T, ACV-50T Series, or Thomas & Betts Corp.'s Nylon Insulated Tite-Bite Series.

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3. Liquidtight Connectors (For Liquidtight Flexible Metal Conduit): Appleton Electric Co.'s STB Series, Crouse-Hinds Co.'s LTB Series, Efcor Inc.'s 11-50B Series, Ideal Industries Inc.'s 75-521 Series, Midwest Electric Mfg. Corp.'s LTB Series, OZ/Gedney Co.'s 4Q-50T Series, Raco Inc.'s 3512 Series, or Thomas & Betts Corp.'s 5332 Series.
- G. Conduit Bodies (Threaded): Appleton Electric Co.'s Unilets, Crouse-Hinds Co.'s Condulets, Efcor Inc.'s Efcorlets, or OZ/Gedney Co.'s Conduit Bodies.
- H. Vertical Conductor Supports: Kellems Div. Harvey Hubbell Conduit Riser Grips, or OZ/Gedney Co.'s Type M, Type R.

2.02 CONDUCTORS (600 VOLTS AND UNDER) AND ACCESSORIES

- A. Date of Manufacture: No insulated conductor over one year old when delivered to the site will be acceptable.
- B. Conductors: Annealed uncoated copper or annealed coated copper in conformance with the applicable standards for the type of insulation to be applied on the conductor.
- C. Insulation:
 1. Types for General Application:
 - a. Type XHHW: Moisture and heat resistant cross-linked polyethylene insulation rated 600V conforming to U.L. requirements for type XHHW insulation (75 degrees C Wet and 90 degrees C dry).
 - b. Type THWN: Polyvinylchloride insulation rated 600V with nylon jacket conforming to U.L. requirements for type THWN insulation (75 degrees C).
 - c. Type THHN: Polyvinylchloride insulation rated 600V with nylon jacket conforming to U.L. requirements for type THHN insulation (90 degrees C).
 2. Types for Specific Application: As required by Article 620 of the National Electrical Code.
 3. Traveling Cables:
 - a. Type: Elevator cables as listed in Article 400, Table 400-4 of the National Electrical Code.
 - b. Insulation Thickness: Suitable for the voltage to which the cables are subjected.

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- c. Minimum Size:
 - 1) Lighting Circuits: No. 14 AWG.
 - 2) Operating, Control, Signaling and Communication Circuits: No. 18 AWG.
 - d. Shielded Twisted Pairs: No. 20 AWG; Number and style to suit operating, control, signaling and communication circuit requirements, minimum of 7 pair.
 - 1) Provide number required for fire speaker and fire telephone circuit requirements: No. 16AWG.
 - e. Coaxial Cable: 75 OHM, RG59/U with mechanical properties to protect against deformation.
 - f. Spare Conductors: Not less than 10 percent.
- D. Splice Connectors:
- 1. Spring Type: Amerace Corp. Elastimold Div.'s Buchanan B-Cap, Electrical Products Div./3M's Scotchlok Type Y, R, G, or B, Ideal Industries Inc.'s Wing Nuts or Wire Nuts, or Thomas & Betts Corp.'s Piggies.
 - 2. Indent Type with Insulating Jacket: Amerace Corp. Elastimold Div.'s Buchanan Pressure Connectors, Ideal Industries Inc.'s Crimp Connectors, or Thomas & Betts Corp.'s STA-KON.
- E. Terminals: Nylon insulated pressure terminal connectors by Amp Special Industries, Burndy Corp., Ideal Industries Inc., Panduit Corp., Thomas & Betts Corp., or Wiremold Co.
- F. Lugs:
- 1. Single Cable (Compression Type Lugs): Copper, one or 2 hole style (to suit conditions), long barrel; Burndy Corp.'s Hylug YA, Ideal Industries Inc.'s CCB or CCBL, or Thomas & Betts Corp.'s 54930BE or 54850BE Series.
 - 2. Single Cable (Mechanical Type Lugs): Copper, one or 2 hole style (to suit conditions); Burndy Corp.'s Quicklug Series, or Thomas & Betts Corp.'s Locktite Series.
- G. Insulation Tapes:
- 1. Plastic Tape: Bishop Electric Corp.'s No. 85, Electrical Products Div./3M's Scotch 88, Plymouth Rubber Co.'s Premium CW.
 - 2. Rubber Tape: Bishop Electric Corp.'s No. W-963, Electrical Products Div./3M's Scotch 23, or Plymouth Rubber Co.'s Splicing Compound ASTM.

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2.03 OUTLET, JUNCTION AND PULL BOXES

- A. Galvanized Steel Boxes For Concealed Work: Standard type galvanized steel boxes and device covers by Appleton Electric Co., Electrical Products Div. Midland-Ross (Steel City), or Raco Inc.
- B. Galvanized Steel Junction and Pull Boxes For Exposed Work: Code gage, galvanized steel screw cover boxes by Gray Metal Products Inc.'s, Hoffman Engineering Co., Keystone Columbia Inc., or Queen Products Co. Inc.
- C. Threaded Type Boxes For Exposed Work: Malleable iron with cadmium or galvanized finish by Appleton Electric Co., Crouse-Hinds Co., or OZ/Gedney Co.
- D. Specific Purpose Outlet Boxes: As fabricated by equipment manufacturers for mounting their equipment.

2.04 SUPPORTING DEVICES

- A. "C" Beam Clamps:
 - 1. For 1 inch Conduit Maximum: Caddy Fastener Div./Erico Products Inc.'s BC-8P and BC-8PSM Series, or HIT Spring Steel Fasteners Inc.'s CH Series.
 - 2. For 3 inch Conduit Maximum: Appleton Electric Co.'s BH-500 Series beam clamp with H50W/B Series hangers, Kindorf Elec. Prod. Div./Midland Ross Corp. 500 Series beam clamp with 6HO-B Series hanger, or OZ/Gedney Co.'s IS-500 Series beam clamp with H-OWB Series hanger.
- B. Fastening Fittings for Existing Masonry: Kindorf Elec. Prod. Div./Midland Ross Corp. E-243, E-244, E-245, E-170, Unistrut Corp.'s P2682, or Versabar Corp.'s VX-4310, VX-2308, VX-4308, VX-4309.
- C. Pipe Straps: Two hole steel conduit straps with Galv-Krom finish; Kindorf Elec. Prod. Div./Midland Ross Corp. C-144 or C-280 Series.
- D. Pipe Clamps: One hole malleable iron type clamps; Kindorf Elec. Prod. Div./Midland Ross Corp. HS-400 Series, or OZ/Gedney Co.'s 14-50 Series.

PART 3 EXECUTION

3.01 RACEWAY INSTALLATION

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- A. Raceway Types and Locations:
1. Install rigid ferrous metal conduit in all locations unless otherwise specified.
 2. Flexible Metal Conduit:
 - a. Use for short runs to equipment such as interlocks, limit switches, hall buttons or items requiring adjustments (dry locations).
 - b. Use 1 to 2 feet of flexible metal conduit for final connection to equipment subject to vibration (dry locations).
 3. Liquidtight Flexible Metal Conduit:
 - a. Use for short runs to equipment such as interlocks, limit switches, hall buttons or other items requiring adjustment (damp and wet locations).
 - b. Use for 1 to 2 foot of liquidtight flexible metal conduit for final conduit connection to equipment subject to vibration (damp and wet locations).
 4. Wireways: May be installed in dry locations.

3.02 CONDUCTOR INSTALLATION

- A. Install wiring in raceways. Exceptions:
1. Traveling cables connecting the car and hoistway wiring.
 2. As permitted otherwise by the exceptions to National Electric Code Article 620-21.
- B. Traveling Cables:
1. Terminate ends of traveling cables in NEMA 1 junction boxes equipped with labeled terminal strips and strain relief devices at both connections.

3.03 OUTLET, JUNCTION AND PULLBOX INSTALLATION

- A. Boxes For Concealed Conduit System:
1. Install boxes of depth to suit job conditions and also comply with Article 370 of the National Electrical Code.
 2. Use galvanized steel boxes with flush covers for junction and pull boxes.
- B. Boxes For Exposed Conduit System:
1. Use threaded type boxes for all Work with conduit sizes 1/2, 3/4 and 1 inch.
 2. Use threaded type boxes for all Work with conduit sizes over 1 inch in wet locations.

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3. Use galvanized steel junction and pull boxes for Work with conduit sizes over 1 inch in dry locations and damp locations.
- C. Specific Purpose Outlet Boxes: Use specific purpose outlet boxes to mount equipment when available and suitable for job conditions.

3.04 SUPPORTING DEVICE INSTALLATION

- A. Attachment of Conduit System:
1. Masonry Construction: Attach conduit to masonry construction by means of pipe straps or pipe clamps and masonry anchorage devices.
 2. Steel Beams: Attach conduit to steel beams by means of "C" beam clamps and hangers.

END OF SECTION

SECTION 260526
GROUNDING AND BONDING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. The Contractor shall provide a complete grounding of electrical systems and equipment.

PART 2 - PRODUCTS

2.01 GROUNDING CONDUCTORS

- A. Copper conductors, bare or insulated with THWN or THHN insulation.
- B. Equipment Grounding Conductors: Insulated with green-colored insulation.
- G. Copper Bonding Conductors: As follows:
1. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG copper conductor, 1/4 inch (6.4 mm) in diameter.
 2. Bonding Conductor: No. 4 or No. 6 AWG, stranded copper conductor.
 3. Bonding Jumper: Bare copper tape, braided bare copper conductors, terminated with copper ferrules; 1-5/8 inches (42 mm) wide and 1/16 inch (1.5 mm) thick.
 4. Tinned Bonding Jumper: Tinned-copper tape, braided copper conductors, terminated with copper ferrules; 1-5/8 inches (42 mm) wide and 1/16 inch (1.5 mm) thick.

2.02 CONNECTOR PRODUCTS

- A. Comply with IEEE 837 and UL 467. Listed for use for specific types, sizes, and combinations of conductors and connected items.
- B. Bolted Connectors: Bolted-pressure-type connectors, or compression type.
- C. Welded Connectors: Exothermic-welded type, in kit form, and selected per manufacturer's written instructions.
- D. All terminal lugs and bolts shall be 98% silicon bronze copper.

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PART 3 - EXECUTION

3.01 APPLICATION

- A. In raceways, use insulated equipment grounding conductors.
- B. Exothermic-welded Connections: Use for connections to structural steel and for underground connections.
- C. Equipment Grounding Conductor Terminations: Use bolted pressure clamps.

3.02 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Bonding Straps and Jumpers: Install so vibration by equipment mounted on vibration isolation hangers and supports is not transmitted to rigidly mounted equipment. Use exothermic-welded connectors for outdoor locations, unless a disconnect-type connection is required; then, use a bolted clamp. Bond straps directly to the basic structure taking care not to penetrate any adjacent parts. Install straps only in locations accessible for maintenance.

3.03 CONNECTIONS

- A. General: Make connections so galvanic action or electrolysis possibility is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.
 - 1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer to order of galvanic series.
 - 2. Make connections with clean, bare metal at points of contact.
 - 3. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.
 - 4. Make aluminum-to-galvanized steel connections with tin-plated copper jumpers and mechanical clamps.
 - 5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

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- B. Exothermic-Welded Connections: Comply with manufacturer's written instructions. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.
- C. Equipment Grounding Conductor Terminations: For No. 8 AWG and larger, use pressure-type grounding lugs. No. 10 AWG and smaller grounding conductors may be terminated with winged pressure-type connectors.
- D. Noncontact Metal Raceway Terminations: If metallic raceways terminate at metal housings without mechanical and electrical connection to housing, terminate each conduit with a grounding bushing. Connect grounding bushings with a bare grounding conductor to grounding bus or terminal in housing. Bond electrically noncontinuous conduits at entrances and exits with grounding bushings and bare grounding conductors, unless otherwise indicated.
- E. Tighten screws and bolts for grounding and bonding connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A [and UL 486B].
- F. Compression-Type Connections: Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by connector manufacturer. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.
- G. Moisture Protection: If insulated grounding conductors are connected to ground rods or grounding buses, insulate entire area of connection and seal against moisture penetration of insulation and cable.

3.04 TESTING

- A. Testing:
 - 1. After installing grounding system but before permanent electrical circuitry has been energized, test for compliance with requirements.
 - 2. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, and at ground test wells.

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Measure ground resistance not less than two full days after the last trace of precipitation, and without the soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance. Perform tests, by the fall-of-potential method according to IEEE 81.

END OF SECTION

SECTION 260533
RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide raceways, fittings, supporting devices, boxes and accessories required for a completely installed system and its proper operation.
- B. Coordinate layout and installation of raceways, boxes, enclosures, cabinets, and suspension and support system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Firestopping/Smoke Seals..... Section 078400

1.03 SUPPLEMENTAL SUBMITTALS

- A. Submit a Product Schedule indicating the item description and manufacturer name. The Schedule will be accepted by the Commissioner for record purposes only, provided that the items are in full compliance with the Specifications.
- B. Certificates

Provide affidavit stating that all items used are UL listed and meet the specifications.
- C. Coordination drawings for conduit buried in concrete slabs, conduit in the ground and service entrance conduit.
Provide conduit routing plan, drawn to scale, showing structural members, architectural features, HVAC and P&D items.

PART 2 - PRODUCTS

2.01 RACEWAYS

- A. Rigid Galvanized Conduit (RGC)

Steel conduit, Schedule 40, hot dipped galvanized, with Underwriters Laboratories label stamped on each length.

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B. Electric Metallic Tubing (EMT)

Industry standard conduit with Underwriters Laboratories label stamped on each length.

C. Flexible Metal Conduit (FMC)

Galvanized steel conduit, Underwriter Laboratories listed.

D. Liquid-tight Flexible Metal Conduit (LTFMC)

Industry standard conduit, Underwriter Laboratories listed.

E. Surface Metal Raceway

Raceway and all components shall be listed by Underwriters Laboratories and they shall be as manufactured by Mono-Systems, Hubbell Inc. or Wire Mold Co. Single Channel (minimum): Wire Mold V700, Hubbell Inc. 750 Series or Mono-Systems SMS700. Dual Channel: Wiremold V4000, Wiremold DS4000 Series, Hubbell Inc. 4000 Series or Mono-Systems SMS4200. The metal raceway shall be of a two-piece design with a base and snap-On cover.

2.02 SUPPORTING DEVICES

A. Hangers

1. Separate hangers shall be installed for supporting conduits. Wherever possible hangers shall be supported from concrete slab by inserts.
2. Hangers and piping installed by other trades shall not be used for supporting electric conduits.

B. Individual and multiple pipe hangers and riser clamps including all parts and hardware shall be hot-dipped galvanized throughout. All U-bolts, clamps, attachments and hardware for hanger assembly and conduits shall be provided. Each multiple hanger shall be designed to support a load equal to or greater than the sum of the weights of the conduits, wires and hanger itself, plus 200 pounds.

C. Use pipe straps and specified method of attachment where conduit is installed proximate to surface of steel stud or masonry construction.

1. Use hangers secured to surface with specified method of attachment where conduit is suspended from the surfaces.

D. Use "C" beam clamps and hangers where conduit is supported from steel beams.

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- E. Use deck clamps and hangers to support conduits from steel decking having hanger tabs. One conduit per tab is permitted.
 - 1. Where conduit is supported from steel decking which does not have hanger tabs, use clamps and hangers secured to decking, utilizing specified method of attachment.
- F. Use channel support system supported from structural steel for multiple parallel conduit runs.
- G. Where conduits are installed above ceiling, do not rest conduit directly on runners bars, T-Bars, etc.
 - 1. Conduit Sizes 2-1/2" and Smaller: Support conduit from ceiling supports or from construction above ceiling.
 - 2. Conduit Sizes Over 2-1/2": Support conduit from beams, joist, or trusses above ceiling.
- H. Conduits shall be supported within three (3) feet of any kind of fitting and at every outlet or junction box, panel, etc. This shall apply to both horizontal and vertical runs.

2.03 BOXES AND ENCLOSURES

- A. The Contractor shall provide outlet boxes and enclosures appropriate for the purpose at all locations where the Drawings require the installation of electrical devices or electrical equipment. For exposed conduit systems, the contractor shall use cast outlet boxes in all locations below 8'-0" with number of threaded hubs equal to the number of conduits, except when installing surface metal raceway contractor shall provide boxes from the same manufacturer of the surface metal raceway.
- B. Where the Contractor selects and installs an item of equipment that requires additional boxes, fittings, etc., or a modification of the conduit system indicated on the Drawings, such additional boxes, fittings, etc. shall be furnished and installed and such modifications shall be performed by the Contractor as part of the Contract, without extra compensation from the Commissioner.

2.04 FITTINGS AND ACCESSORIES

- A. All fittings and accessories shall be UL listed and compatible with selected raceways and suitable for use location. Compression fittings shall be provided with the installation of EMT.

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2.05 CONDUIT SIZES

- A. Where conduit is required to be installed, its nominal diameter shall be not less than 3/4 inch.
- B. For conduit placed in metal deck slabs, the maximum size is 1".
- C. For conduit placed in 4" formed slabs, the maximum size is 3/4" and 1" for slabs greater than 4".

2.06 SLEEVES FOR CONDUIT

- A. Provide sleeves, Schedule 40, galvanized steel, for all electrical conduits and wiring passing through foundation, floors, roofs, beams. Provide as specified herein:
 - 1. Sleeves passing through fire-rated walls, floors, roofs, ceilings, and other areas where indicated: the space between sleeve and pipe/conduit shall be firestopped to comply with fire-rating of assembly through which it passes.

PART 3 - EXECUTION

3.01 RACEWAY SCHEDULE

- A. Rigid Galvanized Steel Conduit (RGC)

Provide RGC as follows:

- 1. All outdoor raceway.
- 2. Concrete encased and exposed.

- B. Electrical Metallic Tubing (EMT)

Provide EMT for feeders and branch circuits for power, lighting and low voltage systems.

- B. Metal Clad Cable (MC)

Provide MC for branch circuit in concealed installation within hung ceiling and gypsum board partitions.

- C. Flexible Metal Conduit (FMC)

- 1. Provide FMC for final conduit connection to:
 - a. Recessed lighting fixtures in suspended ceilings.

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- b. Emergency lighting battery units.
 - c. Motors
 - d. Equipment subject to vibration (dry locations).
 - e. Equipment requiring flexible connections for adjustment or alignment (dry locations).
- 2. In all cases, install equipment-grounding conductor in the flexible raceway and bond at each box or equipment to which flex is connected.
 - 3. Grounding conductors are not shown on the Drawings but shall be included within each branch and main circuit feeder.

D. Surface Metal Raceway

Provide surface metal raceway in finished spaces.

- 1. Secure raceway of one-piece type every 36" alternately with one-hole straps, and support clips (strap, support clip, strap, etc.). Secure raceway of two-piece type every 36" alternately with straps and fasteners through back of raceway (strap, fastener through back, strap, etc.).
- 2. Install separate grounding conductor. Grounding conductors for surface metal raceways are not shown on the Drawings.

E. Liquid-tight Flexible Metal Conduit (LFMC)

Provide LFMC for final conduit connection to:

- 1. Motors and Equipment subject to vibration in damp and wet locations and for Kitchen appliances.
- 2. Equipment requiring flexible connection for adjustment or alignment in damp and wet locations.

3.02 RACEWAY INSTALLATION

A. General

- 1. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

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2. All conduit systems shall be mechanically and electrically continuous.
3. The ends of all conduit shall be square, carefully reamed out to full size, shouldered in the fittings, and bushed or capped wherever stubbed clear of the building.
4. Not more than four (4) 90 degree ells or bends or the equivalent shall be used in any single run of conduit. Conduits for telephone, television, video surveillance or data cable shall not have more than two (2) 90 degree bends or the equivalent. Where more bends are necessary, provide suitable code size pull boxes or fittings. All conduits for telephone, television, video surveillance or data systems cable shall have large radius bends. Pull boxes shall be installed in accessible locations.
5. Conduit installed on equipment shall not obstruct any removable panel, access door, or control. Control apparatus, outlet, junction, and pull boxes shall be installed so as not to interfere with any piping, fixtures, or equipment.
6. Complete raceway installation before starting conductor installation.
7. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.
 - a. Install concealed raceways with a minimum of bends in the shortest practical distance, considering type of building construction and obstructions, unless otherwise indicated.
8. Conduits installed across seismic separations (expansion joints) shall include, but not limited to, the following:
 - a. The conduit (rigid steel or EMT) shall be securely anchored on each side of the seismic separation with a pipe hanger per SMACNA details.
 - b. The spacing between conduit ends shall be 36" minimum.
 - c. A liquid-tight flexible metal conduit of the same size shall be installed between the conduit ends spanning the seismic separation.
 - d. The liquid-tight flexible metal conduit shall be of sufficient length to provide for a longitudinal

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and axial deflection of two (2)-inches minimum in all directions.

9. Terminations:

- a. Where raceways are terminated with locknuts and bushings, align raceways to enter squarely and install locknuts with dished part against box. Use two locknuts, one inside and one outside box.
- b. Where raceways are terminated with threaded hubs, screw raceways or fittings tightly into hub so end bears against wire protection shoulder. Where chase nipples are used, align raceways so coupling is square to box tighten chase nipple so no threads are exposed.

10. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire.

11. Rooftop conduits (rigid steel) shall be neatly grouped and installed parallel to the building lines. Support conduits on minimum 4 inches x 6 inches on pressure treated lumber sleepers at minimum 5 feet spacing.

B. Exposed conduits

Exposed conduits shall be rigidly fastened to structure, or to rigid hangers or angle irons connected to structure at intervals not exceeding eight feet. Where the conduits or surface metal raceways are installed exposed, they shall follow the architectural lines of the enclosure and shall be run as to be as inconspicuous as possible. Conduits or surface metal raceways shall not be installed diagonally on ceilings, walls or columns.

C. Conduit Installed Concealed in Existing Building

Where new partition walls and new hung or furred ceilings are being erected or where existing walls are to have a new tile finish, the conduits and related equipment shall be installed concealed in walls and in hung or furred ceilings.

3.03 CONDUIT TO MOTORS, TABLES, ETC. IN SHOPS AND OTHER ROOMS

- A. Flexible Connections: Use maximum of 72 inches (1830 mm) of flexible conduit for recessed and semi recessed lighting fixtures; for equipment subject to vibration, noise transmission, or movement; and for all motors. Install separate ground conductor across flexible connections.

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3.04 MOUNTING DEVICES

A. Height of Wall Outlets

Unless otherwise indicated, locate outlet boxes with their center lines at the following elevations above finished floor:

Alarm Indicating Devices	8'-0" to center where ceiling height allows a minimum of 2" clearance between ceiling and top otherwise mount so that its top is 2" below finished ceiling.
Exit Lights (N/A)	8'-0" where ceiling height allows a minimum of 6" clearance between ceilings and top light, otherwise mount exit light so that its top is 6" below finished ceiling. Adjust height and clearances as required to suit installation over doors.
Indicators	8'-0" AFF.
Fire Alarm Strobe Lights	80" A.F.F. or 6" below the ceiling whichever is lower
Manual Fire Alarm Boxes	3'-6" (4'-0" if 3'-6" is not possible)
Single & Duplex Receptacles	1'-6"
Special Purpose Receptacles	As indicated on the Drawings.
Switches	4'-0"
Telephone (N/A)	1'-6"

3.05 PAINTING

- A. All exposed raceways and boxes in finished parts of the building shall be painted. Painting shall consist of a prime coat and a finished coat, color as selected by Commissioner. Factory painting will be accepted as a prime coat.

END OF SECTION

SECTION 262416
PANELBOARDS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

Provide panelboards.

1.02 SUPPLEMENTAL SUBMITTALS

A. Submittal Packages

Submit the Shop Drawings, and the product data specified below at the same time as a package.

B. Shop Drawings; include the following for each panelboard:

1. Dimensioned plans, elevations, sections, and details. Show tabulations of installed devices equipment features, and ratings.
2. Cabinet and gutter size.
3. Bus configuration, voltage and current rating.
4. Unless otherwise noted, Panelboard short circuit rating shall conform to U.L. Standards for fully rated systems only.
5. Features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.

D. Field Test Reports: Submit written test reports and include the following:

1. Test Procedures used
2. Test results

E. Panelboard Schedules: For installation in panelboard. Submit final versions after load balancing.

1.03 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in New York City Electrical Code - 2007, by a testing agency

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acceptable to the authorities having jurisdiction, and marked for intended use.

- B. Comply with NEMA PB1.
- C. Comply with New York City Electrical Code - 2007.

1.04 COORDINATION

- A. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, and encumbrances to workspace clearance requirements.

PART 2 - MATERIAL - PRODUCTS

2.01 PANELBOARDS - CIRCUIT BREAKER TYPE

- A. Equipment manufactured by Electrtech, All City switchboard Corp., Metropolitan electric Manufacturing Co., Electric Switchboard Co., General Electric Co., Siemens, Square D Co., Eaton/Cutler-Hammer having:
 - 1. Bus bars and lugs shall not be less than 98% conductivity, hard drawn copper. All copper bus connections shall be bolted with lock washers and joints shall be silver plated.
 - 2. Full capacity copper neutral bus in panelboards where neutrals are required.
 - 3. Copper equipment grounding bus in panelboards where equipment grounding conductors are required.
 - 4. Section designated "space" or "provision for future breaker" equipped to accept future circuit breakers.
 - 5. Molded-Case Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Circuit breakers shall be

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bolt on. Plug-in type breakers are not acceptable.

B. GFCI circuit breakers shall be provided for designated circuits.

C. Panelboard Cabinets

1. Flush and surface mounted cabinets. NEMA PB 1, Type 1, to meet environmental conditions at installed location.

2. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box.

3. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.

4. Finish: Manufacturer's standard enamel finish over corrosion-resistant treatment or primer coat.

D. Locks

Provide locks for panelboard cabinets located outside electrical rooms/closets. Locks shall be of approved cylinder, paracentric type, Yale No. 511S, Key change No. 47. Two keys shall be supplied with each lock.

E. Directories

A directory consisting of a steel or aluminum frame with a non-breakable, non-inflammable plastic face and cardboard or heavy white paper shall be installed on the inside of the door of cabinets for all panelboards. Frame shall be welded to door or fastened by approved screws to a mat in such a manner as not to leave anything projecting on the outside of the door. The cardboard or heavy paper shall have typewritten directory thereon stating the following: The number of each circuit together with the name of circuits, load controlled, size of circuit feeder

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and subfeeder conductors. Directory frames shall be not less than 8" x 8".

2.02 NAMEPLATES

- A. Each unit of equipment shall be provided with a riveted phenolic nameplate, identifying the equipment and its rating.
- B. On each circuit breaker and fused switch: ampere rating, fuses size and fuses type (or circuit breaker type and setting) and circuit designation.
- C. On panelboard: ampere rating, nominal voltage, phases and panelboard designation.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install panelboards in accordance with NEMA Publication No. PB1.1 "General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 Volts or less".
- B. Cabinet Supports
 - a. Panelboards set on walls where a chase is not provided by others, shall be provided with Kindorf channels on both sides of the panel with these channels running from floor slab to ceiling slab and secured to both.
 - b. Surface mounted panels shall be fastened to walls by expansion shields, or the equivalent. Heavy panelboards shall be supported from the floor by means of approved angle iron framework.
 - c. Steel angle or channel supporting members shall be provided to adequately support distribution equipment for floor mounting with all necessary bracing.

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C. Setting of Cabinets

Elsewhere in the building, panelboards shall be set so that top of cabinet is approximately 6 feet 6 inches above floor.

D. Cleaning

On completion of installation, inspect interior and exterior of panelboards. Remove paint splatters and other spots. Vacuum dirt and debris; do not use compressed air to assist in cleaning. Repair exposed surfaces to match original finish.

3.02 TESTS

A. Prepare for acceptance tests as follows:

1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder and control circuit.

2. Test continuity of each circuit.

B. Testing: After installing panelboards and after electrical circuitry has been energized, demonstrate product capability and compliance with requirements.

C. Balancing Loads: After Substantial Completion, but not more than 60 days after Final Acceptance measure load balancing. Difference exceeding 20% between phase load is not acceptable. Rebalance and recheck as necessary to meet this minimum requirement.

END OF SECTION

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SECTION 262419
MOTORS, MOTOR STARTERS,
AND CONTROL EQUIPMENT

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide and make final connections to all motors, motor control centers, starters and accessories, connect equipment furnished under other Sections of the Specifications.

Obtain all wiring diagrams and other information furnished by the manufacturer of the equipment. Coordinate and supplement the wiring diagrams and schedules with any additional function of operational requirements specified in other Sections of the Specifications. Provide control equipment to execute the sequence of operation.

1.02 REFERENCES

- A. NEMA MG-1 - Motors and Generators
- B. NEMA ICS - General Standards for Industrial Control and Systems

1.03 SUPPLEMENTAL SUBMITTALS

- A. Submittal Package
- Submit product data for motors and starters as a package.
- B. Product Data:
1. For each type of controller and each type of motor-control center, include dimensions and manufacturer's technical data on features, performance, electrical characteristics, ratings, and finishes.
- C. Shop Drawings: For each starter and controller.
- Dimensioned plans, elevations, sections, and details, including required clearances and service space around equipment. Show tabulations of installed devices, equipment features, and ratings. Include the following:
- a. Each installed unit's type and details.
 - b. Nameplate legends.

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- c. Short-circuit current ratings of buses and installed units.
- d. Vertical and horizontal bus capacities.
- e. UL listing for series rating of overcurrent protective devices in combination controllers.

Feature, characteristics, ratings, and factory settings of each motor-control center unit.

Wiring Diagrams: Power, signal, and control wiring for class and type of motor-control. Differentiate between manufacturer-installed and field-installed wiring. Provide schematic wiring diagram for each type of controller.

- D. Coordination Drawings: Floor plans showing dimensioned layout, required working clearances, and required area above and around motor-control centers where pipe and ducts are prohibited.
- E. Field Test Reports: Written reports specified in Part 3.
- F. Manufacturer's field service report.
- G. Maintenance Data: For starters and controllers, all installed devices, and components to include in maintenance. In addition include the following:
 - 1. Routine maintenance requirements for motor-control centers and all installed components.
 - 2. Manufacturer's written instructions for testing and adjusting over current protective devices.
- H. Load-Current and Overload-Relay Heater List: Compile after motors have been installed and arrange to demonstrate that selection of heaters suits actual motor nameplate full-load currents.
- I. Load-Current and List of Settings of Adjustable Overload Relays: Compile after motors have been installed and arrange to demonstrate that dip switch settings for motor running overload protection suit actual motor to be protected.

1.04 QUALITY ASSURANCE

- A. Source Limitations: Obtain LonWorks compatible controllers of a single type through one source from a single manufacturer. Where LonWorks compatible controllers are not available from the unit manufacturer,

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provide "gateway" to translate the unit manufacturer's protocol to the LonTalk protocol.

- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Comply with NFPA 70.

1.05 COORDINATION

- A. Coordinate layout and installation of starters and motor-control centers with other construction including conduit, piping, equipment, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.
- B. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases.
- C. Coordinate installation of roof curbs, equipment supports, and roof penetrations.
- D. Coordinate features of motor-control centers, installed units, and accessory devices with pilot devices and control circuits to which they connect.
- E. Coordinate features, accessories, and functions of each motor-control center, each controller, and each installed unit with ratings and characteristics of supply circuit, motor, required control sequence, and duty cycle of motor and load.

PART 2 - PRODUCTS

2.01 MOTORS

- A. Motor (Nameplate) Voltage
 - 1. 120/208 Volt, Three Phase, 4 Wire Incoming Service
 - a. Motors less than 1/2 HP: NEMA standard motor voltage 115V single phase, 60 Hz.
 - b. Motors 1/2 HP and larger: NEMA standard motor voltage 208V, three phase, 60 Hz.
- B. Single phase motor shall be capacitor start, open drip-proof unless otherwise noted.

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- C. Three-phase motors shall be squirrel-cage, open drip-proof unless otherwise noted.
- D. Motors in general shall have cast iron frame, full voltage starting.
- E. Drawings shall indicate horsepower, voltage and RPM.
- F. Temperature rise and insulation system class shall conform to NEMA standards.
- G. Motors shall be of the highest grade manufactured by: Allis Chalmers Mfg. Co., Baldor Electric Co., Century Electric Co., Continental Electrical Motors Co., General Dynamics Corps., Howell Electric Motors Co., Imperial Electric Co., Peerless Electric Co., Reliance Electric & Engineering Co., Wagner Electric Corp., or Westinghouse Electric & Mfg. Co., or approved equal.
- H. Motor nameplate data shall be in accordance with NEMA Standards.

2.02 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Starters:
 - a. Eaton Corp.; Cutler-Hammer Products.
 - b. General Electrical Distribution & Control.
 - c. Rockwell Automation Allen-Bradley Co.; Industrial Control Group.
 - d. Square D Co.
 - e. Or approved equal.

2.03 MAGNETIC MOTOR STARTERS

- A. Description: NEMA ICS 2, Class A, full voltage, nonreversing, across the line, unless otherwise indicated.
- B. Control Circuit: 120 V
- C. Combination Starter: Factory-assembled combination starter and disconnect switch.
 - 1. Fusible Disconnecting Means: NEMA KS 1, fusible switch with rejection-type fuse clips rated for fuses. Select and size fuses to provide Type 2

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protection according to IEC 947-4-1, as certified by a nationally recognized testing laboratory.

2. Nonfusible Disconnecting Means: NEMA KS 1, nonfusible switch.
 3. Circuit-Breaker Disconnecting Means: NEMA AB 1, motor-circuit protector with field adjustable, short-circuit trip coordinated with motor locked-rotor amperes.
- D. Overload Relay: Ambient-compensated type with inverse-time-current characteristic. Provide with heaters or sensors in each phase matched to nameplate full-load current of specific motor to which they connect and with appropriate adjustment for duty cycle.
- E. Star-Delta Controller: NEMA ICS 2, closed transition with adjustable time delay.

2.04 FEEDER OVERCURRENT PROTECTION

- A. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits.
- B. Fusible Switch: NEMA KS 1, Type HD, clips to accommodate specified fuses with lockable handle.

2.05 FACTORY FINISHES

- A. Finish: Manufacturer's standard paint applied to factory-assembled and tested controllers before shipping.

2.06 MANUAL ENCLOSED STARTERS

- A. Description: NEMA ICS 2, general purpose, Class A, with toggle action and overload element.

2.07 MAGNETIC ENCLOSED STARTERS

- A. Description: NEMA ICA 2, Class A, full voltage, nonreversing, across the line, unless otherwise indicated.
- B. Control Circuit: 120 V
- C. Combination starter: Factory-assembled combination starter and disconnect switch.

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1. Fusible Disconnecting Means: NEMA KS 1, fusible switch with rejection-type fuse clips rated for fuses.
 2. Nonfusible Disconnecting Means: NEMA KS 1, nonfusible switch.
 3. Circuit-Breaker Disconnecting Means: NEMA AB 1, motor-circuit protector with field adjustable, short-circuit trip coordinated with motor locked-rotor amperes.
- D. Overload Relay: Ambient-compensated type with inverse-time-current characteristic. Provide with heaters or sensors in each phase matched to nameplate full-load current of specific motor to which they connect and with appropriate adjustment for duty cycle.
- E. Motor Control Push Button Stations and H-O-A Switches
- Provide push button stations of the momentary contact type with pilot light, installed with a common faceplate.
- Provide "Hand-Off-Automatic" (H-O-A) switches for all starters controlling equipment with automatic actuating apparatus.

2.08 PUSHBUTTON STATIONS

A. Normal Duty

Momentary Start-Stop with pilot light in NEMA 1 enclosure.

2.09 KEY-OPERATED CONTROL STATION

- A. Key-operated control station shall be pushbutton stop, key-operated reset type. Control station (DC) shall be ASCO cat. # 216B89 in conjunction with pushbutton control stations ASCO 173A19 (flush mounting) or ASCO 173A20 (surface mounting), or approved equal of Square D.
- B. Key-operated control station shall enable shutting down power panels in case of emergency and shall reset the power "on" by means of a key.

2.10 VARIABLE-FREQUENCY DRIVES

- A. Description: Provide for non-packaged systems conforms to NEMA ICS 2, NFPA and IEC standards, pulse-width-

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modulated, variable-frequency drive; listed and labeled as a complete unit and arranged to provide variable speed of a NEMA MG 1, Design B, 3-phase, induction motor by adjusting output voltage and frequency.

- B. Design and Rating: Match load type such as fans, blowers, and pumps; and type of connection used between motor and load such as direct or through a power-transmission connection.
- C. Isolation Transformer: Match transformer voltage ratings and capacity to system and motor voltages; and controller, motor, drive, and load characteristics. Add 3% line reactor on the line side or 5% line reactor on the load side of the drive.
- D. Output Rating: 3-phase; 6 to 60 Hz, with voltage proportional to frequency throughout voltage range.
- E. Starting Torque: 100 percent of rated torque or as indicated.
- F. Speed Regulation: Plus or minus 1 percent.
- G. Thermal management system for operation in extreme Temperature: 140 F to 1220 F (-100 C to 500 C).
- H. Efficiency: 95 percent minimum at full load and 60 Hz.
- I. Minimum Displacement Power Factor at Input Terminals: 95 percent.
- J. Isolated control interfaced allows controller to follow control signal over an 11:1 speed range.
 - 1. Electrical Signal: 4 to 20 mA at 24 V.
 - 2. Pneumatic Signal: 3 to 15 psig (20 to 104 kPa).
- K. Internal Adjustability: Include the following internal adjustment capabilities:
 - 1. Minimum Speed: 5 to 25 percent of maximum rpm.
 - 2. Maximum Speed: 80 to 100 percent of maximum rpm.
 - 3. Acceleration: 2 to 22 seconds.
 - 4. Deceleration: 2 to 22 seconds.
 - 5. Current Limit: 50 to 110 percent of maximum rating.
- L. Multiple-Motor Capability: Controller suitable for service to multiple motors and having a separate overload relay and protection for each controlled motor. Overload relay shall shut off the controller and motors served by it when overload relay is tripped.

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- M. Self-protection and reliability features shall include the following:
1. Input transient protection by means of surge suppressors.
 2. Add 5% line reactors.
 3. Motor Overload Relay: Adjustable and capable of NEMA 250, Class 10 performance.
 4. Notch filter to prevent operation of the controller-motor-load combination at a natural frequency of the combination.
 5. Instantaneous overcurrent trip.
 6. Loss-of-phase protection.
 7. Reverse-phase protection
 8. Under-and overvoltage trips.
 9. Over temperature trip.
 10. Short-circuit protection.
 11. Under-voltage ride-thru qualified to the SEMI-47 standard.
- N. Automatic Reset/Restart: Attempt three restarts after controller fault or on return of power after an interruption and before shutting down for manual reset or fault correction. Restarting during deceleration shall not damage controller, motor, or load.
- O. Power-Interruption Protection: Prevents motor from re-energizing after a power interruption until motor has stopped.
- P. Status Lights: Door-mounted LED indicators shall indicate the following conditions:
1. Power on
 2. Run
 3. Overvoltage
 4. Line fault
 5. Overcurrent
 6. External fault
- Q. Panel-Mounted Operator Station: Start-stop and auto-manual selector switches with manual speed control potentiometer and elapsed time meter.
- R. Indicating Devices: Meters or digital readout devices and selector switch, mounted flush in controller door and connected to indicate controller output current, voltage, and frequency.
- S. Manual Bypass: Magnetic contactor shall be arranged to safely transfer motor between controller output and bypass

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controller circuit when motor is at zero speed. Controller-off-bypass, selector-switch indicator lights set and indicate mode selection.

- T. Integral Disconnecting Means: NEMA AB 1, molded-case switch; KS 1, non-fusible switch with lockable handle.
- U. Bypass Controller: NEMA ICS 2, full-voltage, nonreversing controller with across-the-line starting capability in manual-bypass mode. Provide motor overload protection under both modes of operation with control logic that allows common start-stop capability in either mode.
- V. Isolating Switch: Non-load-break switch arranged to isolate variable-frequency controller and permit safe troubleshooting and testing, both energized and de-energized, while motor is operating in bypass mode.
- W. Remote Indicating Circuit Terminals: Mode selection, controller status, and controller fault.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. For control equipment at walls, bolt units to wall or mount on lightweight structural-steel channels bolted to wall. For controllers not at walls, provide freestanding racks.
- B. Install freestanding equipment on concrete bases.

The arrangement and mounting of all control equipment shall be such, that the handle of the safety switch will be easily operable from the floor, at approximately 5'-0" mounting height.

Manually operated control equipment shall have handles or push buttons 4-feet from floor, unless otherwise noted on Drawings.

Provide a white core phenolic nameplate on all motor control equipment.

- C. In general, roof fan motor circuit wiring is run to starters in grouped locations. Starters shall be mounted on steel framework where shown on Drawings.

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Pilot light assemblies shall be installed in the covers of respective starters

- D. Connect hand-off-automatic switch and other automatic-control devices where available.
1. Connect selector switches to bypass only manual-and automatic-control devices that have no safety functions when switch is in hand position.
 2. Connect selector switches with motor-control circuit in both hand and automatic positions for safety-type control devices such as low-and high-pressure cutouts, high-temperature cutouts, and motor overload protectors.
 3. [For each motor automatically and/or manually controlled or monitored by the fire alarm system, include control wiring extensions as specified as part of the fire alarm system to an adjacent FPA addressable module.]
 4. For each motor supplied by a VFD, run 2 #14 from the disconnect switch at the motor to the VFD, and connect so as to de-energize "start circuit" when switch is open. Run with power circuitry or in separate raceway.
 5. Control wiring for single phase HVAC motors with manual controllers shall be provided as part of the electrical work. For each such motor, provide wiring and connect to all outlying control devices as directed. Refer to GHAC drawings and specifications for quantities and locations.
- E. Control wiring for plumbing motors will be provided as part of the work of Division 23 as applicable.
- F. Control wiring shall be accomplished utilizing #14 AWG copper conductor with THWN installation.
- G. Nameplates
- Identify starters, motor-control center, motor-control center components, and control apparatus wiring. Identify each pushbutton station and motor starter. Identify each interlock switch, indicating purpose of switch.
1. NEMA 1 Enclosures: Rivet or bolt nameplate to the cover

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2. NEMA 3R, 4, 4X, 7, or 9 Enclosures: Attach name-plates to the cover using adhesive specifically designed for the purpose.

3.02 FIELD TESTS

- A. Perform tests, in the presence of the Commissioner to demonstrate:
 1. That each control device and its related motor starter operate properly.
 2. That each overload and undervoltage protection safety device functions properly.
 3. That each safety shut-off valve and device operates properly.
- B. Tests shall be performed in accordance with the equipment manufacturers' start-up and field test instructions and made jointly with all relevant trades.
- C. Should the tests reveal any defects, promptly correct such defects and rerun the tests until the entire installation is satisfactory in all respects.
- D. Tests shall be coordinated by the Contractor who shall provide (48) hrs. min. notice to the Commissioner for approval of schedule.

3.03 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain motor-control centers [and variable-frequency drives].
 1. Train Owner's maintenance personnel on procedures and schedules for starting and stopping, troubleshooting, servicing, and maintaining equipment and schedules.
 2. Review data in maintenance manuals.

END OF SECTION

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SECTION 262812
SAFETY SWITCHES

PART 1 GENERAL

1.01 SUBMITTALS

- A. Product Data: Catalog sheets, specifications and installation instructions.

PART 2 PRODUCTS

2.01 SAFETY SWITCHES (SINGLE THROW)

- A. NEMA 1, 3R,: Heavy Duty Series, Cutler-Hammer Inc.'s DH, General Electric Co.'s Type H, Square D Co.'s Heavy Duty Series, or Westinghouse Electric Corp.'s H-600; having:
1. Fuses, or unfused as indicated on drawings.
 2. Fused switches equipped with fuseholders.
 3. NEMA 1 enclosure unless otherwise indicated on drawing.
 4. 240V rating for 120V, 208V, or 240V, circuits.
 5. Solid neutral bus when neutral conductor is included with circuit.
 6. Ground bus when equipment grounding conductor is included with circuit.
 7. Current rating and number of poles as indicated on drawings.

2.02 NAMEPLATES

- A. General: Precision engrave letters and numbers with uniform margins, character size minimum 3/16 inch high.
1. Phenolic: Two color laminated engravers stock, 1/16 inch minimum thickness, machine engraved to expose inner core color (white).
 2. Aluminum: Standard aluminum alloy plate stock, minimum .032 inches thick, engraved areas enamel filled or background enameled with natural aluminum engraved characters.
 3. Materials for Outdoor Applications: As recommended by nameplate manufacturer to suit environmental conditions.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install switches so that the maximum height above the floor to the center of the operating handle does not exceed 5'-6".
- B. Identify each safety switch, indicating purpose or load served:
 - 1. NEMA 1 Enclosures: Rivet or bolt nameplate to the cover.
 - 2. NEMA 12 Enclosures: Rivet or bolt and gasket nameplate to the cover.
 - 3. NEMA 3R: Attach nameplate to the cover using adhesive specifically designed for the purpose, or mount nameplate on wall or other conspicuous location adjacent to switch. Do not penetrate enclosure with fasteners.
- C. Paint switches used for the fire protective signaling system with red paint and identify - "FIRE ALARM CIRCUIT CONTROL".
- D. Paint switches used for oil burner emergency switch with red paint and identify "OIL BURNER".

END OF SECTION

SECTION 265190
INTERIOR LIGHTING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide lighting fixtures, supports and accessories including plaster frames, trim rings and backboxes for plaster, drywall, or concrete ceilings as necessary.
- B. The types of lighting fixtures to be installed are indicated and detailed on fixture schedule on the Drawings, which also provides details on manufacturers, catalog numbers, lamping, etc.
- C. Coordinate with other trades to avoid conflicts between installation of fixtures and supports with the installation of mechanical equipment, ceiling structures, etc.
- D. All lighting fixtures shall operate on nominal volts, 60 Hz single phase service as indicated on the Drawings and in the Specifications.

1.02 SUPPLEMENTAL SUBMITTALS

- A. Product Data
 - 1. Provide standard print catalog sheets, Specifications, installation instructions, and photometric data from a recognized independent laboratory for each type of fixture. Submittals that do not include distribution curves and photometric data will be rejected. All options and specified requirements shall be identified on submittal.
- B. Mounting Details

Submit mounting details for each type of fixture including attachments to structure, anchors, rods, hickeyes, etc.
- C. Submission of Substitute Fixtures (fixtures other than specified herein or on the Fixture Schedule).
 - A. Submittals for substitute fixtures shall be the standard print catalog sheets from the manufacturers (CADD drawings and computer printouts are not acceptable).
 - B. Substitute fixture shall meet or exceed photometric quality of fixture designated on the schedule.

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- C. Substitute fixture shall meet or exceed the quality of the fixture designated on fixture schedule in construction, finishing, materials, reflector, louver, diffuser etc.
- D. Substitute fixture shall closely match the appearance, dimensions and features of the fixture designated.
- E. Submit one sample of each type of substitute fixture as requested, with one set of mounting hardware for approval.
- F. In order to ensure that the work is performed in an orderly and expeditious manner, the Contractor shall be permitted no more than three (3) submittals for substitution of each specific fixture type. Should the third submittal be rejected, then the Contractor shall be required to provide the fixture specified on the fixture schedule.
- G. Spare Parts.

1.03 FIXTURE PROTECTION

- A. The Contractor is required to protect fixtures from damage during installation and up to time of acceptance. Broken fixtures, glassware, plastics, lamps, etc. shall be replaced by the Contractor with new parts, without any additional until final acceptance.

1.04 SPARE PARTS

- A. Diffusers

Provide a spare diffuser for every twenty (20) of each type and size installed, but not less than one (1) of each.

- B. Screwdrivers

Provide one (1) screwdriver suitable for each type of vandal resistant screw installed on fixtures.

- C. Delivery

- 1. Spares shall be provided and delivered with an itemized list and a receipt taken, certifying that these spare parts have been delivered securely packed and received in acceptable condition.

PART 2 - PRODUCTS

2.01 GENERAL

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- A. Provide lighting fixtures as designated on the fixture schedule. Lighting fixtures of the fixture schedule are designated by types, manufacturers and catalog numbers. Substitute fixtures by approved manufacturers listed in these specifications will be approved, provided that all requirements are satisfied.
- B. The requirements specified herein are minimum requirements and shall be supplemented by any other requirements indicated on the fixture schedule. All fixtures, including those designated on the fixture schedule on the drawings by Catalog Numbers, or Catalog Numbers mentioned in the Specifications, shall nevertheless be specially modified to meet the requirements of these specifications.
- C. All fixtures and components shall be UL listed and meet NYC Electrical Code.

2.02 FIXTURE COMPONENTS

- A. Equip fixtures with:
 - 1. Ballasts (electronic) suitable for operation on 60 Hz circuit, voltage rating to suit branch circuit voltage.
 - 2. Diffusers
 - a. Unless otherwise noted, parabolic diffusers shall be fabricated from semi-specular iridescence free aluminum with precisely formed and rigidly assembled blades. Reflectors shall be die formed of 20-ga. cold rolled steel.
 - b. Lens type diffusers shall be 100% clear virgin acrylic. The over-all plastic thickness of the diffuser or lens shall be a minimum of 0.130" and shall be a "male" type pyramidal in shape"; "female" types are not acceptable.
 - c. Diffusers shall be as manufactured by Diversified, KSH, or Holophane.
 - d. Diffusers shall be fastened in a regressed extruded aluminum envelope door frame of code gauge metal with positive latching and shall be secured to the fixture housing by two (2) safety chains with spring clips or approved equivalent means.
 - 4. Holders and Spun Work
 - a. All shells, canopies or other spun parts shall be not less than No. 20 gauge unless otherwise

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- specified with a reasonable tolerance allowed for finishing.
- b. All screw type globe holders shall be reinforced so that screws shall have a bearing of at least four full threads. Screws holding glassware and/or plastics shall have check nuts or equivalent.
 - c. Globe holders shall be not less than 6" in diameter unless otherwise specified. Screwless safety type globe holders are acceptable.
5. Wire guards
- a. Wire guards shall be provided where indicated on the Drawings, typically with a "G" next to the fixture.
 - b. Guards shall be made of #9 gauge minimum steel wire, fully welded at all points. Finish shall be bright zinc plate. Additional wire guard information may be shown on Drawing Details and Notes.
 - c. Guards for surface mounted fixtures shall be secured to ceiling/wall with hinge access.
6. Finishing collar and/or combination finishing collar/outlet box.
7. Provide end caps positively attached for individually mounted fluorescent fixtures and ends of continuous rows.
8. Lamps for all fixtures shall be as indicated on Drawing or in these Specifications.

2.03 FLUORESCENT FIXTURE

- A. Fluorescent fixture housing shall be constructed of sheet metal not less than No. 20 gauge. Fixture housing shall be electrically welded.
- B. Ballast covers may be 22 gauge.
- C. Diffusers shall be fastened in an extruded aluminum or 19 gauge flush steel door frame, and fasten to the fixture body by means of approved hinges or hinging device. When in closed position, hinged frame shall be held by captive thumbscrews. Two (2) chain retainers shall be provided attached to diffuser frame with spring clips.
- D. Self-threading or sheet metal screws and nuts will not be accepted. Fixture and/or parts, such as finishing plates

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and trims for recessed fixtures, shall not be installed until all plastering and painting has been completed.

- E. Fluorescent fixture finish shall be white powder coat post painted to provide a minimum of 90% reflectivity (including all internal and external components).
- F. Recess lay-in type fixtures shall be provided with four (4) factory-supplied, UL listed earthquake safety clips.
- G. Fluorescent fixtures shall be as indicated on fixture schedule, or approved equal as manufactured by approved manufacturers listed below in alphabetical order:

Cooper Lighting, Day Brite, General Electric, Guth, Hasco, Holophane, ICON, Legion, Lightolier, Lightron, Linear Lighting, Lumax, McGraw Edison, Lithonia, Mercury, National, NeoRay, Paramount, SPI, Vantage and Hubbell Lighting (Columbia Lighting), Day-O-Lite, Peerless Lighting.
- H. Fixtures by these manufacturers must conform to all applicable paragraphs in these specifications.

PART 3 - EXECUTION

3.01 FIXTURE INSTALLATION

A. General

- 1. The Contractor shall be responsible for the proper and safe mounting and support of all lighting fixtures. Installation shall meet all the requirements of the National Electrical Code. Provide all items of equipment (stems, hangers, rods, inserts, boxes, brackets, yokes, channels, frames, etc.) required to adequately and safely support each lighting fixture in a manner acceptable to the DCLA.
- 2. Provide a lighting fixture at each location shown on Drawings of the type indicated by symbol or other notation.
- 3. The Contractor shall examine the drawings and coordinate closely with the all General Construction trades on all work involved with each type of fixtures to be installed. Contractor shall verify all sizes, locations and conditions under which lighting fixtures are to be installed.
- 4. The Contractor is required to protect fixtures from damage during installation, up to time of acceptance by

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the DCLA. Any broken or marred fixtures, glassware, plastics, lamps, etc. shall be replaced by the Contractor at no additional cost.

5. A suitable outlet box shall be provided by the Contractor for each lighting fixture provided. The box shall be cast into concrete or supported using two double split type anchors when installed in concrete walls or ceiling.
6. Number of supports for fixtures shall be as specified in "Lighting Fixture Support Schedule" in Article 3.03.
7. A surface or pendant type fixture, regardless of its weight, shall not be mounted directly on the concealed or exposed ceiling spline of a lightweight, mechanical acoustical ceiling system. Such fixtures shall be supported from the building structure.

3.03 LIGHTING FIXTURE SUPPORT SCHEDULE

- A. Unless otherwise indicated on drawings, provide the following number of supports for fixtures.
 1. An adequately supported outlet box with fixture stud may be utilized as one point of support for surface or recess fixtures weighing less than 40 lbsl.
- B. Ceiling Mounted Fixtures (Surface Mounted, Pendant Mounted or Recessed Mounted)
 1. Ceiling Mounted Fluorescent Fixtures:
 - a. Support individual fluorescent fixtures 2 feet or wider at 4 corners.

3.04 WIRING AND CONNECTIONS

- A. Each fixture shall be completely wired in approved standard trade practices in accordance with the requirements of the Electrical Code of the City of New York.
- B. Wires within fluorescent fixtures, wiring between the ceiling outlet box and the fixture, and all wiring between fixtures in a continuous row shall be #14 AWG minimum, insulated for 1,000 volts, and rated at 90°C minimum. Wiring shall be approved by the Advisory Board for fluorescent fixture wire and meet the above requirements.
- C. Wiring to pendant fixtures shall be run through the stem and iron bushing or straight cord and stainless steel wire.

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3.05 CLEANING

- A. All lighting fixtures, both interior and exterior shall be cleaned prior to final acceptance, for the removal of all construction debris, dust, fingerprints, exposed labels. Fixtures and or parts which have been damaged, scratched, chipped or inadvertently painted during construction shall be repaired and/or replaced.

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SECTION 265192
LAMPS, BALLASTS AND ACCESSORIES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide lamps, ballasts and accessories as specified herein and as indicated on Drawings. All lamps and ballasts and their installation shall comply with the NY State Energy Conservation Construction Code - Effective 07/03/2002. All installations & equipment shall comply with NYC Electrical Code.
- B. All fluorescent lamps shall be low mercury (green-end-cap) type compliant with US EPA Toxicity Characteristic Leaching Procedure (TCLP).
- C. Lamp type, wattage, CRI and color temperature shall be in compliance with this specification and as indicated on the drawings
- D. Fixtures shall be high efficiency fluorescent or LED type. In general, fluorescent lamps shall be super T-8 low mercury triphosphorous type with electronic ballasts suited for the application. LED lamps shall be used in lieu of existing halogen or incandescent for track lights.

1.02 LAMPS, GENERALLY

- A. Fluorescent, and LED lamps for all fixtures shall be provided by the Contractor. Quantity of lamps shall be as indicated on Drawings, or as required by the fixture installation.
- B. In general all interior lighting fixtures shall be equipped with T8 or super T8 lamps with tri-phosphor coating and low mercury content.
- C. Lamps shall be the standard product of General Electric Lamp Co., Osram/Sylvania Electric Co., and Philips Co.
- D. All fluorescent fixtures and shall be furnished with solid state energy saver type ballasts. Ballast for fluorescent lamps shall be suitable for one, two, three and four lamp configurations, as necessary, but shall not serve other non-ballasted fixtures unless indicated on the Drawings.
- E. Linear T5 Fluorescent lamps may be used with written permission.

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1.03 SPARES

A. In addition to those installed in fixtures, the Contractor shall provide spare lamps in original cartons, packaged and labeled and delivered to the Commissioner representative as follows:

1. Provide 2 spare LED and one (1) box of Fluorescent lamps

1.04 SUPPLEMENTAL SUBMITTALS

- A. Submit samples as requested by the Authority.
- B. Spares.

PART 2 - PRODUCTS

2.01 FLUORESCENT LAMPS

- A. Fluorescent lamps shall have a luminous efficacy of no less than 90 lm/W, CRI (Color Rendering Index) of no less than 80 and color temperature of 3500K.
- B. Linear fluorescent lamps shall be F32T8/835 and F25T8/835 medium bi-pin base with 20,000 hours lamp life
- C. Compact Fluorescent lamps shall be twin, quad or **triple** tube type with 4-pin base suitable for operation on electronic ballast circuit. The minimum lamp life shall be 20, 000 hours for long biaxial lamps and 10, 000 hours for short lamps.
- D. Biaxial lamps shall be equipped with the end of life extinguishing technology.
- E. Linear T5 Fluorescent lamps may be used with written permission from the Authority

2.02 LED

- A. Unless otherwise specified on the Drawings, LED lamps shall be 120VAC, medium Edison screw socket, PAR30, minimal lamp life of 30000 hours, reflector type.

2.03 FLUORESCENT BALLASTS

- A. Unless otherwise noted on the Drawings, fluorescent ballasts shall be type "A" sound rated, high frequency electronic type with .88 BF (Ballast Factor) normal light output, high power factor of .95 or greater and less than 10% total harmonic distortion.

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- B. Ballasts shall be installed by the fixture manufactures in accordance with NEMA and NEC requirements. All ballasts shall be UL listed.
- C. Electronic ballasts shall be by Advance, Universal Lighting Technologies, Osram/Sylvania and shall be warranted for five years including cost of labor for ballast replacement.
- D. Ballasts shall operate lamps on a parallel circuit and allow remaining lamps to maintain full output if companion lamp fails. Ballasts shall not be affected by lamp failure and shall not affect normal lamp life.
- E. Ballasts used in circuits controlled by the occupancy sensors and daylight harvesting switching shall be program start.
- F. Instant start ballasts are allowed for circuits, which are intended to be, switched no more than ones per day.
- G. Ballast shall meet the requirements of Federal Communications Commission Part 18 for Electromagnetic interference and RFI, Non Consumer Equipment.
- H. Dimming ballasts shall be suitable for operation with specified dimming equipment. Do not energize until lamps are in place.
- I. Ballasts shall be internally protected from line transients defined in defined in ANSI C62.41-1991 location A2.
- J. Ballasts potting compound shall contain no PCB.
- K. T5 and Compact fluorescent ballasts shall incorporate auto resetting end of life circuit interruption cut off.
- L. Ballasts for control of lamps in one housing or fixture unit shall not control lamps of an adjoining unit, (except where specified or for continuous cove lighting and only if the unit with the ballast is properly identified. This requirement shall apply to all fluorescent fixtures unless otherwise indicated on the Drawings or in the Specifications for purposes of multiple switching and control).
- M. In three-lamp fixtures three-lamp ballast shall be provided. Where three lamp fixtures are split wired (wired to two switches), the center lamp (and its one-lamp ballast) (of each fixture to a circuit) shall be

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wired to the same circuit, unless connected to the emergency circuit.

2.05 EMERGENCY LIGHTING BALLAST

- A. Emergency ballast shall be New York City approved and comply with U.L.924 for installation on the top of the fixture (Internal Type) or remotely (External Type).
- B. Input power rating shall not exceed 8 watts at 120 volt. Inverter circuit shall be solid state design of the ferroresonant type. Charger shall be fully automatic by solid state constant potential type and shall be temperature compensated to assure optimum battery life.
- C. Upon failure of normal AC power, an automatic relay circuit shall instantly apply battery power to the inverter circuit to operate one or two lamps for 90 minutes. The unit shall be provided with solid state circuitry to allow for normal switching of fixture to OFF position. Normal OFF switching solid state circuitry shall permit the unit to differentiate between normal OFF switching and loss of normal AC power without activating the emergency battery.
- D. The unit shall consist of the following items:
 - 1. Battery: 24 volt, Field-replaceable Nickel-Cadmium type.
 - 2. Charger: Fully automatic, solid state, constant-current type with sealed power transfer relay.
 - 3. Test Push Button and Indicator Light: Visible and accessible without opening fixture or entering ceiling space.
 - 4. Emergency Connection: Operate one fluorescent lamp continuously. Connect unswitched circuit to battery-inverter unit and switched circuit to fixture ballast.
 - 5. Diagnostic LED panel shall include the following functions: battery charge/failure, lamp failure, and circuit transfer failure.
 - 6. A double-pole momentary test switch.
 - 7. Housing: Housing to be white powder coated. Heavy duty 18 gauge steel case.
- E. Approved manufacturer: Bodine B30ST or approved equal.

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PART 3 - EXECUTION

3.01 INSTALLATION

- A. Provide the precise complement of lamps in every indoor lighting fixture provided under the Contract.
- B. Install lamps in accordance with manufacturer's instructions.
- C. Provide electronic ballasts of compatible design to lamps required.
- D. Ballast shall be screwed to fixture body and be provided with quick disconnects on wiring to allow for ease of replacement.
- E. Install LED lamps in existing track lighting.

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SECTION 28 31 01
FIRE DETECTION AND ALARM SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The requirements of the Contract Documents, including the General Conditions and Division 1 - General Requirements shall apply to the work of this section.
- B. The entire system shall be installed with aesthetics in mind. All control panels and remote annunciators installed in public spaces shall be semi-flush mounted with no exposed conduit or cable trays.

1.02 WORK INCLUDED

- A. The work covered by this Section of the Specification shall include all labor, equipment, materials and services to upgrade the existing Fire alarm system with capacity for the new smoke detection devices required by the HVAC upgrade and by the new elevator installation. It shall be complete with all necessary hardware, software and memory specifically tailored for this installation. It shall be possible to permanently modify the software on site by using a plug-in programmer. The system shall consist of, where applicable, but not be limited to, the following:
 - 1. Addressable analog duct smoke detectors.
 - 2. Sprinkler supervisory switches and tamper switch supervision.

1.03 APPLICABLE CODES AND STANDARDS

- A. All equipment shall be UL listed for its intended use and conform to the latest UL Standards.
- B. Underwriters Laboratories Inc.: The system and all components shall be listed by Underwriters Laboratories Inc. for use in fire protective signaling system under the following standards as applicable:

UL 864/UOJZ, APOU Control Units for Fire Protective Signaling Systems.

UL 268 Smoke Detectors for Fire Protective Signaling Systems.

UL 268A Smoke Detectors for Duct Applications.

UL 217 Smoke Detectors Single Station.

- C. This installation shall comply with:
 - 1. Americans with Disabilities Act (ADA)

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2. National Electric Code, Article 760 with NYC Amendments.
3. National Fire Protection Association Standards: NFPA72
4. Local and State Building Codes and the Local Authorities Having Jurisdiction.
5. International Standards Organization (ISO): ISO-9001
6. The latest provisions of and amendments to Local Law No. 5, Local Law No. 16 and Local Law No. 58 of the City of New York.
7. Utilize OTCR / MEA / BSA Approved Fire Alarm Equipment
8. The requirements of the City of New York Building Department and the City of New York Fire Department.

1.04 RELATED DOCUMENTS

- A. Secure permits and approvals prior to installation.
- B. Prior to commencement and after completion of work notify Commissioner.
- C. Submit letter of approval for installation before requesting acceptance of system.

1.05 RELATED WORK

- A. The Contractor shall coordinate work in this Section with all related trades. Work and/or equipment provided in other Sections and related to the fire alarm system shall include, but not be limited to:
 1. Sprinkler waterflow and supervisory switches. Modification of sprinkler devices to accommodate monitoring by the new fire alarm system. Duct smoke detectors. The Contractor shall furnish necessary duct opening to install the duct smoke detectors.
 2. New air handling control circuits and status contacts.
 3. Elevator recall control circuits. The operation of the elevators shall be in accordance with applicable codes.
 4. Raceways, Fittings, supporting Devices, Boxes and Accessories: Section 260533.
 5. Wiring Systems: Section 260522.

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1.06 SUBMITTALS

- A. Provide list of all types of equipment and components provided. This shall be incorporated as part of a Table of Contents, which will also indicate the manufacturer's part number, the description of the part, and the part number of the manufacturer's product datasheet on which the information can be found.
- B. Provide description of operation of the system (Sequence of Operation), similar to that provided in Part 2 of this Section of the Specifications, to include any and all exceptions, variances or substitutions listed. Any such exceptions, variances or substitutions that were not listed and are identified in the submittal, shall be grounds for immediate disapproval without comment. The sequence of operation shall be project specific, and shall provide individual sequences for every type of alarm, supervisory, or trouble condition that may occur as part of normal or off-normal system use.
- C. Provide manufacturer's ORIGINAL printed product data, catalog cuts and description of any special installation procedures. Photocopied and/or illegible product data sheets shall not be acceptable. All product datasheets shall be highlighted or stamped with arrows to indicate the specific components being submitted for approval.
- D. Provide manufacturer's installation instruction manual for specified system.
- E. Provide samples of various items when requested.
- F. Provide copy of NYS License to perform such work.
- G. Provide copies of NICET Level II Fire Alarm certifications for the two (2) technicians assigned to this project.
- H. Provide shop drawings as follows:
 - 1. Coversheet with project name, address and drawing index.
 - 2. General notes drawing with peripheral device backbox size information, part numbers, device mounting height information, and the names, addresses, point of contact, and telephone numbers of all contract project team members.
 - 3. Device riser diagram that individually depicts all control panels, annunciators, addressable devices, and notification appliances. Shall include a specific, proposed point descriptor above each addressable device. Shall include a specific, discrete point address that

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shall correspond to addresses depicted on the device layout floor plans. Drawing shall provide wire specifications, and wire tags shown on all conductors depicted on the riser diagram. All circuits shall have designations that shall correspond with those require on the control panel and floor plan drawings. End-of-line resistors (and values) shall be depicted.

4. Control panel termination drawing(s). Drawing shall provide a detail indicating where conduit penetrations shall be made, so as to avoid conflicts with internally mounted components and or batteries. No penetration or conduit entrance shall be made on the top of any fire alarm enclosure. For each additional data gathering panel, a separate control panel drawing shall be provided, which clearly indicated the designation, service and location of the control enclosure. End-of-line resistors (and values) shall be depicted.
5. Device typical wiring diagram drawing(s) shall be provided which depict all system components, and their respective field wiring termination points. Wire type, gauge, and jacket shall also be indicated. When an addressable module is used in multiple configurations for monitoring or controlling various types of equipment, different device typical diagrams shall be provided. End-of-line resistors (and values) shall be depicted.
6. Device layout floor plans shall be created for every area served by the fire alarm system. CAD Files (AutoCAD - latest edition) shall be provided by the Commissioner for the use of the fire alarm system equipment vendor in the preparation of the floor plans. Floor plans shall indicate accurate locations for all control and peripheral devices. Drawings shall be NO LESS THAN 1/8 INCH SCALE. All addressable devices shall be depicted with a discrete address which corresponds with that indicated on the Riser Diagram. All notification appliances shall also be provided with a circuit address which corresponds to that depicted on the Riser Diagram. If individual floors need to be segmented to accommodate the 1/8" scale requirements, KEY PLANS and BREAK-LINES shall be provided on the plans in an orderly and professional manner. End-of-line resistors (and values) shall be depicted.
- I. Battery calculations shall be provided on a per power supply/charger basis based on applicable code requirements. These calculations shall clearly indicate the quantity of devices, the device part numbers, the supervisory current draw, the alarm current draw, totals for all categories, and the calculated battery requirements. Battery calculations

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shall also reflect all control panel component, remote annunciator, and auxiliary relay current draws. Failure to provide these calculations shall be grounds for the complete rejection of the submittal package.

1.07 WARRANTY

A. All work performed and all material and equipment furnished under the contract shall be free from defects and shall remain so for a period of at least one (1) year from the date of acceptance or approval by Commissioner. The full cost of maintenance, labor and materials required to correct any defect during this one year period shall be included.

PART II - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. All new components to be compatible with the existing FCI 7200 FACP.
- B. Final determination of compliance with these Specifications shall rest with the Engineer, who, at his discretion, may require proof of performance.
- C. Product submissions made without proof of no less than three (3) factory authorized and certified manufacturer's distributors residing within 50 miles of the project job site shall be rejected. These distributors must not only provide installation support, but must have a service organization capable of 24 hour emergency call service.
- D. All products used shall be of a single manufacturer. Submission of notification appliances, auxiliary relays, or documentation from other than a single manufacturer shall not be acceptable and will be grounds for immediate disapproval without comment.

2.02 CIRCUITING GUIDELINES

- A. Each addressable analog loop shall be circuited so device loading is not to exceed 80% of loop capacity in order to leave for space for future devices. The loop shall have Class B operation.
- B. Where it is necessary to interface conventional initiating devices provide intelligent input modules to supervise Class B zone wiring.
- C. Each of the following types of devices or equipment shall be provided with supervised circuits as shown on the drawings but shall be typically as follows:

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1. Sprinkler Valve Supervisory Switches: Provide one (1) supervisory module circuit for each sprinkler valve supervisory switch.
 2. When waterflow and tamper switches exist at the same location, provide one (1) dual input addressable module. When odd numbers of devices exist at a single location, provide additional single input addressable modules.
- D. Alarm: The FACP central processing unit (CPU) shall provide a general alarm Temporal 3-code operation.
- E. Each of the following types of alarm notification appliances shall be circuited as shown on the drawings but shall be typically as follows:
1. Audible Signals: Provide sufficient spare capacity to assure that the addition of five (5) audible devices can be supported without the need for addition control components (power supplies, signal circuit modules, amplifiers, batteries, etc.)
 2. Visual Signals Provide sufficient spare capacity to assure that the addition of three (3) visual devices can be supported without the need for addition control components (power supplies, signal circuit modules, batteries, etc.)
- F. Each of the following types of remote equipment associated with the fire alarm system shall be provided with a form 'C' control relay contact as shown on the drawings, but shall be typically as follows:
1. HVAC Fan Systems: Provide one (1) shutdown control relay contact for each HVAC fan system.
 2. HVAC Supply Fans: Provide one (1) shutdown control relay contact for each HVAC supply fan.
 3. HVAC Return Fans: Provide one (1) shutdown control relay contact for each HVAC return fan.
- G. Provide a dedicated 24VDC circuit to feed all auxiliary relays required for inductive loads. Circuits shall be supervised via an end-of-line relay and addressable input module. Auxiliary relays shall not derive their power from the starter or load being controlled.

2.03 FIRE ALARM SYSTEM SEQUENCE OF OPERATION

- A. Operation of any area smoke detect/sensor, duct smoke detect/sensor, shall automatically

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1. Update the control/display as described above (A.1.)
2. Sound a pulsing audible signal and flash the general alarm LED indicator at the FACP. Pressing the alarm acknowledge key on the FACP shall silence the audible signal and continuously light the LED, during the alarm condition. Subsequent alarm conditions shall resound the audible signal and again flash the LED. Each alarm condition must be individually acknowledged.
3. Display a general alarm indication and system status summary (numbers of alarm, supervisory and/or trouble conditions) on the FACP alphanumeric, liquid crystal display (LCD). The LCD Display shall automatically display the device/circuit type and the custom 42-character message without any operator intervention.
4. Enter the custom label for the device or circuit reporting the alarm condition with the time and date of alarm activation into the FACP historical alarm log for future recall/review.
5. Sound an audible signal at the remote annunciator panel. The audible signal may be silenced during the alarm condition. Subsequent alarm conditions shall resound the audible signal.
6. Visually annunciate the alarm-initiating device via an individual or "group" alarm indicator.
7. Display a general alarm indication and system status summary (numbers of alarm, supervisory and /or trouble conditions) on the remote annunciator panels(s) alphanumeric, liquid crystal display (LED). The LCD shall automatically display the device type and custom 42-character display without operator intervention.
8. Sound the appropriate Temporal 3 alarm code on all horns throughout the building. Activation of a smoke or heat detector shall also continuously sound the smoke/heat alarm bell at the FACP. The smoke/heat alarm bells may be silenced by operation of the FACP signal silence switch.
9. Flash all alarm strobe lights throughout the building. The alarm strobe lights may be turned off during the alarm condition by operation of the FACP alarm silence switch. Subsequent alarm conditions shall again turn on the alarm strobe lights. The alarm strobe lights shall be inhibited from being turned off for a period of one/three/five (1/3/5) minutes after commencing operation.

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10. Each alarm strobe light circuit shall be provided with a synchronized flash module, at the FACP, so that all alarm strobe lights connected to any single alarm strobe light circuit shall flash at the same time at a rate of one (1) flash per second.
 11. Flash all alarm strobe lights. Subsequent alarm condition shall again turn on the alarm strobe lights. The alarm strobe lights shall be inhibited from being turned off for a period of five (5) minutes after commencing operation.
 12. Operate control relay contacts to shutdown all air handling systems that serve the building and close any smoke dampers related to those systems. Air handling systems shall not be permitted to restart to normal operation from the simple operation of the system reset switch. A separate air handling systems restart switch shall be provided on the FACP to permit air handling systems to be restarted after the fire alarm system has been reset to normal.
 13. Operate control relay contact to initiate the transmission of an alarm indication by type of alarm condition (manual alarm, or smoke/heat alarm) to a central station agency via telephone lines. Selection of a central station agency, its equipment, its fees and fees for telephone line usage are the responsibility of the City of New York.
- B. Elevator smoke and heat detector sequences shall comply with the applicable code requirements for floor recalls and shunt trip (if allowed).
- C. Activation of a sprinkler supervisory initiating device shall:
1. Update the control/display as described above (A.1.)
 2. Transmit a supervisory condition, via the integral central station communicator, to central station/Local Fire.
 3. Visually annunciate the individual point of alarm on all remote annunciator panels. The visual indication shall remain on until the alarm condition is reset to normal.

2.04 COMPONENTS

A. Intelligent Devices-General

Each remote device shall have a microprocessor with non-volatile memory to support its functionality and

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serviceability. Each device shall store as required for its functionality the following data: device serial number, device address, device type, personality code, date of manufacture, hours in use, time and date of last alarm, amount of environmental compensation left/used, last maintenance date, job/project number, current detector sensitivity values, diagnostic information (trouble codes) and algorithms required to process sensor data and perform communications with the loop controller.

Each device shall be capable of electronic addressing, either automatically or application programmed assigned, to support physical/electrical mapping and supervision by location. Setting a device's address by physical means shall not be necessary.

B. Intelligent Detectors - General

The System Intelligent Detectors shall be capable of full digital communications using both broadcast and polling protocol. Each detector shall be capable of performing independent fire detection algorithms. The fire detection algorithm shall measure sensor signal dimensions, time patterns and combine different fire parameters to increase reliability and distinguish real fire conditions from unwanted deceptive nuisance alarms. Signal patterns that are not typical of fires shall be eliminated by digital filters. Devices not capable of combining different fire parameters or employing digital filters shall not be acceptable.

Each detector shall have an integral microprocessor capable of making alarm decisions based on fire parameter information stored in the detector head. Distributed intelligence shall improve response time by decreasing the data flow between detector and analog loop controller. Detectors not capable of making independent alarm decisions shall not be acceptable. Maximum total analog loop response time for detectors changing state shall be 0.5 seconds.

Each detector shall have a separate means of displaying communication and alarm status. A green LED shall flash to confirm communication with the analog loop controller. A red LED shall flash to display alarm status.

The detector shall be capable of identifying up to 32 diagnostic codes. This information shall be available for system maintenance. The diagnostic code shall be stored at the detector.

Each smoke detector shall be capable of transmitting pre-alarm and alarm signals in addition to the normal, trouble and need cleaning information. It shall be possible to program control panel activity to each level. Each smoke detector may be individually programmed to operate at any one of five (5) sensitivity settings.

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Each detector microprocessor shall contain an environmental compensation algorithm which identifies and sets ambient "Environmental Thresholds" approximately six times an hour. The microprocessor shall continually monitor the environmental impact of temperature, humidity, other contaminants as well as detector aging. The process shall employ digital compensation to adapt the detector to both 24 hour long term and 4 hour short term environmental changes. The microprocessor shall monitor the environmental compensation value and alert the system operator when the detector approaches 80% and 100% of the allowable environmental compensation value. Differential sensing algorithms shall maintain a constant differential between selected detector sensitivity and the "learned" base line sensitivity. The base line sensitivity information shall be updated and permanently stored at the detector approximately once every hour.

The intelligent analog detectors shall be suitable for mounting on any Signature Series detector mounting base.

The Fire alarm system shall have the ability to set elevator lobby Ionization or Multi Sensing smoke detectors for alarm verification. Detector in the alarm verification mode shall indicate, by point in a text format at the main control and at the remote LCD annunciators.

C. Ionization Smoke Detector,

Provide intelligent ionization smoke detectors. The analog ionization detector shall utilize a unipolar ionization smoke sensor to sense changes in air samples from its surroundings. The integral microprocessor shall dynamically examine values from the sensor and initiate an alarm based on the analysis of data. Systems using central intelligence for alarm decisions shall not be acceptable. The detector shall continually monitor any changes in sensitivity due to the environmental affects of dirt, smoke, temperature, aging and humidity. The information shall be stored in the integral processor and transferred to the analog loop controller for retrieval using a laptop PC or the SIGA-PRO Signature Program/Service Tool. The ion detector shall be rated for ceiling installation at a minimum of 30 ft (9.1m) centers and be suitable for wall mount applications. The ion smoke detector shall be rated for operation in constant air velocities from 0 to 75 ft/min. (0-0.38 m/sec) and with intermittent air gusts up to 300 ft/min. (1.52m/sec) for up to 1 hour.

The percent smoke obscuration per foot alarm set point shall be field selectable to any of five sensitivity settings ranging from 0.7% to 1.6%. The ion detector shall be suitable for operation in the following environment:

- Temperature: 32°F to 120°F (0°C to 49°C)

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- Humidity: 0-93% RH, non-condensing
- Elevation: Up to 6,000 ft. (1828 m)

D. Photoelectric Smoke Detector

Provide intelligent photoelectric smoke detectors. The analog photoelectric detector shall utilize a light scattering type photoelectric smoke sensor to sense changes in air samples from its surroundings. The integral microprocessor shall dynamically examine values from the sensor and initiate an alarm based on the analysis of data. Systems using central intelligence for alarm decisions shall not be acceptable. The detector shall continually monitor any changes in sensitivity due to the environmental affects of dirt, smoke, temperature, aging and humidity. The information shall be stored in the integral processor and transferred to the analog loop controller for retrieval using a laptop PC or the SIGA-PRO Signature Program/Service Tool. The photo detector shall be rated for ceiling installation at a minimum of 30 ft (9.1m) centers and be suitable for wall mount applications. The photoelectric smoke detector shall be suitable for direct insertion into air ducts up to 3 ft (0.91m) high and 3 ft (0.91m) wide with air velocities up to 5,000 ft/min. (0-25.39 m/sec) without requiring specific duct detector housings or supply tubes.

The percent smoke obscuration per foot alarm set point shall be field selectable to any of five sensitivity settings ranging from 1.0% to 3.5%. The photo detector shall be suitable for operation in the following environment:

- Temperature: 32°F to 120°F (0°C to 49°C)
- Humidity: 0-93% RH, non-condensing
- Elevation: no limit

E. Standard Detector Mounting Bases

Provide standard detector mounting bases suitable for mounting on North American 1-gang, 3½" or 4" octagon box and 4" square box. The base shall, contain no electronics, support all Signature Series detector types and have the following minimum requirements:

- Removal of the respective detector shall not affect communications with other detectors.
- Terminal connections shall be made on the room side of the base. Bases which must be removed to gain access to the terminals shall not be acceptable.
- The base shall be capable of supporting one (1) Signature Series SIGA-LED Remote Alarm LED Indicator. Provide remote LED alarm indicators where shown on the plans.

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F. Duct Detector

Provide Low profile intelligent addressable DUCT smoke detector as indicated on the project plans. Provide for variations in duct air velocity between 100 and 4,000 feet per minute and include a wide sensitivity range of .79 to 2.46%/ft. Obscuration. Include one Form-C shut down relay rated 2.0 amps @ 30 Vdc and also include slave high contact relays if required. Provide an air exhaust tube and an air sampling inlet tube that extends into the duct air stream up to ten feet. The addressable DUCT housing shall be suitable for extreme environments, including a temperature range of -20 to 158 degrees F (-29 to 70 degrees Celsius) and offer a harsh environment gasket option. Provide Remote Alarm LED Indicators SIGA-LED and/or remote test station model SD-TRK as indicated on the project plans.

G. Intelligent Modules-General

It shall be possible to address each Intelligent Signature Series module without the use of DIP or rotary switches. Devices using DIP switches for addressing shall not be acceptable. The personality of multifunction modules shall be programmable at site to suit conditions and may be changed at any time using a personality code downloaded from the Analog Loop Controller. Modules requiring EPROM, PROM, ROM changes or DIP switch and/or jumper changes shall not be acceptable. The modules shall have a minimum of 2 diagnostic LEDs mounted behind a finished cover plate. A green LED shall flash to confirm communication with the loop controller. A red LED shall flash to display alarm status. The module shall be capable of storing up to 24 diagnostic codes which can be retrieved for troubleshooting assistance. Input and output circuit wiring shall be supervised for open and ground faults. The module shall be suitable for operation in the following environment:

- Temperature: 32°F to 120°F (0°C to 49°C)
- Humidity: 0-93% RH, non-condensing

H. Dual Input Module

Provide intelligent dual input modules. The Dual Input Module shall provide two (2) supervised Class B input circuits each capable of a minimum of 4 personalities, each with a distinct operation. The module shall be suitable for mounting on North American 2 1/2" (64mm) deep 1-gang boxes and 1 1/2" (38mm) deep 4" square boxes with 1-gang covers. The dual input module shall support the following circuit types:

- Normally-Open Alarm Latching (Manual Stations, Heat Detectors, etc.)
- Normally-Open Alarm Delayed Latching (Waterflow Switches)

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- Normally-Open Active Non-Latching (Monitor, Fans, Dampers, Doors, etc.)
- Normally-Open Active Latching (Supervisory, Tamper Switches)

I. Waterflow/Tamper Module: Provide intelligent waterflow/tamper modules. The Waterflow/Tamper Module shall be factory set to support two (2) supervised Class B input circuits. Channel A shall support a Normally-Open Alarm Delayed Latching Waterflow Switch circuit. Channel B shall support a Normally-Open Active Latching Tamper Switch. The waterflow/tamper module shall be suitable for mounting on North American 2 1/2" (64mm) deep 1-gang boxes and 1 1/2" (38mm) deep 4" square boxes with 1-gang covers.

J. Control Relay Module, SIGA-CR

Provide intelligent control relay modules. The Control Relay Module shall provide one form "R" dry relay contact rated at 2 amps @ 24 Vdc to control external appliances or equipment shutdown. The control relay shall be rated for pilot duty and releasing systems. The position of the relay contact shall be confirmed by the system firmware. The control relay module shall be suitable for mounting on North American 2 1/2" (64mm) deep 1-gang boxes and 1 1/2" (38mm) deep 4" square boxes with 1-gang covers.

K. Remote Relays

Multi-Voltage Control Relays

Provide remote control relays connected to supervised ancillary circuits for control of fans, etc. Relay contact ratings shall be SPDT and rated for 10 amperes at 115 Vac. A single relay may be energized from a voltage source of 24 Vdc, 24 Vac, 115 Vac, or 230 Vac. A red LED shall indicate the relay is energized. A metal enclosure shall be provided.

L. Multi-Voltage Control Relays

Provide remote control relays connected to supervised ancillary circuits for control of fans, etc. Relay contact ratings shall be DPDT and rated for 10 amperes at 115 Vac. A single relay may be energized from a voltage source of 24 Vdc, 24 Vac, 115 Vac, or 230 Vac. A red LED shall indicate the relay is energized. A metal enclosure shall be provided.

PART III - EXECUTION

3.01 INSTALLATION

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- A. The entire system shall be installed in a workmanlike manner, in accordance with approved manufacturer's wiring diagram. The contractor shall furnish all conduit, wiring, outlet boxes, junction boxes, cabinets and similar devices necessary for the complete installation. All wiring shall be of the type recommended by the manufacturer, approved by the local Fire Department, NYC code, and specified with in. All conduit and wire shall meet the requirements of applicable code.
- B. All penetration of floor slabs and firewalls shall be sleeved (1" conduit minimum) fire stopped in accordance with all local fire codes.
- C. End of Line Resistors shall be furnished as required for mounting as directed by the manufacturer. Devices containing end-of-line resistors shall be appropriately labeled. Devices should be labeled so removal of the device is not required to identify the EOL device.
- D. All mechanical rooms, boiler rooms, wiring closets, custodian rooms, attic spaces, etc. or areas with no hung ceilings shall be piped with 3/4" conduit and installed as necessary by NYC Code. All areas in public view shall be in metal conduit. All boxes must be painted red and labeled "INTERIOR FIRE ALARM".
- E. All addressable modules shall be mounted within 36 inches of the monitored or controlled point of termination. This shall include, but is not necessarily limited to, fan shutdown, elevator recall, shunt trip, sprinkler status points, or door release. Label all addressable modules as to their function.
- F. All low voltage wiring terminated to the fire alarm system shall be PLENUM RATED with no exceptions and no less than No. 12 AWG in size for NAC circuits and 14 AWG for Initiating Circuits, and solid copper per applicable codes. Exposed wire above 8ft AFF shall be 150 degrees C and as specified in NYC code.
- G. All line voltage (120VAC) wiring shall be no less than No. 12 AWG in size, and solid copper. This shall include all system grounding. FACP must have a DEDICATED fused disconnect switch and fused cut out, if required, arranged per NYC code. Fused cut out shall be utilized if additional circuits are required that cannot be accommodated by a single fused disconnect switch.
- H. All wiring shall be color-coded throughout, to National Electrical Code standards and NYC codes.
- I. Power-limited/Non-power-limited NEC wiring standards SHALL BE OBSERVED.
- J. All junction box covers shall be painted red and labeled INTERIOR FIRE ALARM SYSTEM.

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- K. Fire alarm system wiring shall not co-mingle with any other system wiring in the facility. Conduits shall not be shared under any circumstance. Only when fire alarm wiring enters the enclosure of a monitored or controlled system will co-habitation be permitted (i.e. at fan starters or elevator controllers). THIS WILL BE FIELD INSPECTED BY THE PROJECT COMMISSIONER.
- L. Auxiliary relays shall be appropriately labeled to indicate "FIRE ALARM SYSTEM" and their specific function (i.e. FAN S-1 SHUTDOWN).
- M. All fire alarm wiring shall be continuous and unspliced. Terminations shall only occur at fire alarm devices or control panel enclosures under terminal screws. All other splicing methods are specifically disallowed (i.e. plastic wirenuts).
- N. All fire alarm wiring shall be installed using a dedicated system of supports (i.e. bridle rings). Fire alarm wiring shall not be bundled or strapped to existing conduit, pipe or wire in the facility. THIS WILL BE FIELD INSPECTED BY THE COMMISSIONER.
- O. All fire alarm wiring shall be sleeved when passing through any wall, using conduit sleeves (1" min.) with bushings, and fire stopped in accordance with Code.
- P. All fire alarm devices shall be accessible for periodic maintenance. Should a device location indicated on the Contract Drawings not meet this requirement, it shall be the responsibility of the contractor to bring it, in writing, to the attention of the Commissioner.

3.02 FIELD QUALITY CONTROL

- A. The system shall be installed and fully tested under the supervision of a trained manufacturer's representative. The system shall be demonstrated to perform all of the function as specified.
- B. The contractor or fire alarm equipment vendor shall have no less than two (2) NICET Level II fire alarm technicians dedicated to this project.
- C. The Contractor and the Fire Alarm System Vendor shall, upon the request of the Commissioner or End-User, attend any and all project meetings for the purpose of accurately determining progress.
- D. It shall be the responsibility of the contractor to assure that construction debris does not adversely affect any sensing devices installed as part of this project. Should it be deemed necessary by the Commissioner, End-User or

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AHJ, the contractor shall be responsible for the cleaning of all smoke detectors prior to final acceptance.

3.03 TESTS

- A. The fire alarm system vendor shall test the system in accordance with the manufacturer's requirements and NFPA 72 as amended by the NYC Building Code. The vendor shall provide completed reports to the Commissioner for review and approval prior to final acceptance.
- B. Each individual system operation on a circuit-by-circuit basis shall be tested for its complete operation. The procedure for testing the entire fire alarm system shall be set forth with the consent of the code enforcement official, the Engineer and the manufacturer.

3.04 DOCUMENTATION AND DEMONSTRATION

- A. The contractor shall compile and provide to the owners three (3) complete manual on the completed system to include SITE SPECIFIC operating and maintenance instruction, catalog cuts of all equipment and components, as-built wiring diagrams and a manufacturer's suggested spare parts list, and an end user training video on DVD disk.
- B. In addition to the above manuals, the Contractor shall provide the services of the manufacturer's trained representative for two (2) separate calendar days for a period of four (4) hours per day to instruct the owners' designated personnel on the operation and maintenance of the entire system.
- C. As-built drawings shall consist of the following:
 - 1. Complete revision of all previously submitted drawings
 - 2. Point-to-point depiction of all device wiring on the device layout floor plans.
 - 3. One (1) set of B-size, laminated as-built drawings.
 - 4. Two (2) sets of 30"x42"inch 1/16"=1' scale drawings showing all points of fire alarm. One set shall be submitted with the close-out documents. Second set shall be mounted in frame with a lexan cover. These drawing must be submitted to Commissioner for approval.
- D. The Contractor shall provide City of New York hard and soft copies of Fire Alarm System's software & programming database upon final approval of NYC FD. The database provided shall be usable by any authorized and certified distributor of the product line, and shall include all applicable passwords necessary for total and unrestricted

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use and modification of the database. City of New York
(DCLA) SHALL RETAIN COMPLETE RIGHTS AND OWNERSHIP TO ALL
SOFTWARE RUNNING THE SYSTEM

GPI shall define the extent of hardcopy database
documentation to be provided.

END OF SECTION

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SECTION 310000
EARTHWORK

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Cast-In-Place Concrete: Section 033000.

1.02 DEFINITIONS

- A. The following terms shall have the meanings ascribed to them in this Article, wherever they appear in this Section.
1. Earth Excavation: The removal of all surface and subsurface material not classified as rock (as defined below).
 2. Subgrade Surface: Surface upon which subbase or topsoil is placed.
 3. Foundation Bearing Grade: Grade/elevation at which the bottom-of-footings are constructed.
 4. Maximum Density: The dry unit weight in pounds per cubic foot of the soil at "Optimum Moisture Content" when determined by ASTM D 698 (Standard Proctor), or ASTM D 1557 (Modified Proctor).
 5. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
 6. Unauthorized Excavation: The removal of material below required elevation indicated on the Drawings or beyond lateral dimensions indicated or specified without specific written direction by the Commissioner.

1.03 SUBMITTALS

- A. Shop Drawings:
1. Underpinning: Submit shop drawings and associated calculations for underpinning. Shop drawings and calculations shall be signed and sealed by a New York State licensed professional engineer.
- B. Quality Control Submittals:
1. Excavation Procedure: Submit a lay out drawing or detailed outline of intended excavation procedure for the Commissioner's information. This submittal will not relieve the Contractor of

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- responsibility for the successful performance of intended excavation methods.
2. Subbase Materials: Name and location of source and the DOT Source Number. If the material is not being taken from an approved DOT Source the results of the gradation and soundness tests performed by an ASTM certified soils laboratory will be required.
 3. Other Aggregates: Name and location of source and soil laboratory test results.

1.04 PROJECT CONDITIONS

- A. Cold Weather Requirements:
1. Excavation: When freezing temperatures are anticipated, do not excavate to final required elevations for concrete work unless concrete can be placed immediately.
 2. Backfilling: If backfill is being placed during freezing temperatures the backfilling operations shall be monitored by the Commissioner and the following procedures shall be followed:
 - a. Frozen ground shall be removed in its entirety from beneath and five feet beyond the area of fill placement.
 - b. The fill material placed shall consist of Selected Fill and shall be free of all frozen chunks that exceed four inches in size. The material transported to the project site shall only consist of material excavated from below the frost depth.
 - c. At the end of the work day, the area of fill placement shall be covered with insulated blankets, or left unprotected. Other means of protection (hay, wood chips, etc.) may also be used for protection provided it is approved by the Commissioner.
 - d. Following work day, remove the insulated blankets and/or strip the area of all frozen material as specified previously.
 - e. Upon establishing the subgrade elevations, protect the grades with insulated blankets or place additional material that will adequately insulate the exposed earth surface from frost. This additional fill or protective material shall be stripped just prior to pouring concrete.

PART 2 - PRODUCTS

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2.01 MATERIALS

- A. Select Granular Material: Stockpiled, sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials. Comply with the gradation and material requirements specified below:

Sieve		Percent Passing
Sieve Size	Size opening (mm)	
2 inch	50.8	100
1/4 inch	6.35	30-65
No. 40	0.425	5-40
No. 200	0.075	0-10

1. Magnesium Sulfate Soundness Test: 20 percent maximum loss by weight after four test cycles.
2. Plasticity Index: The plasticity index of the material passing the No. 40 mesh sieve shall not exceed 5.0.
3. Elongated Particles: Not more than 30 percent, by weight, of the particles retained on a 1/2 inch sieve shall consist of flat or elongated particles. A flat or elongated particle is defined as one which has its greatest dimension more than three times its least dimension.

- B. Selected Fill: Sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials. Comply with the gradation requirements specified below:

Sieve		Percent Passing
Sieve Size	Size opening (mm)	
4 inch	101.6	100
No. 40	0.425	0-70
No. 200	0.075	0-15

- C. Marker Tape: FL Industries Blackburn/Holub's Type YT6, or Seton Nameplate Corporations Type 6 ELE, imprinted with message suited to item buried below.

PART 3 - EXECUTION

3.01 UNDERGROUND UTILITIES

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- A. Locate existing underground utilities prior to commencing excavation work. Determine exact utility locations by hand excavated test pits. Support and protect utilities to remain in place.
- B. Do not interrupt existing utilities that are in service until temporary or new utilities are installed and operational.
- C. Utilities to remain in service: Shall be re-routed as shown on the Contract Drawings.
- D. Utilities abandoned beneath and five feet laterally beyond the structure's proposed footprint shall be removed in their entirety. Excavations required for their removal shall be backfilled and compacted as specified herein.

3.02 UNDERPINNING

- A. General
 - 1. Inspect site, examine existing conditions and make all necessary preparations for the safe and proper sequence of work.
 - 2. Properly guard and protect excavations so as to prevent them from becoming dangerous to person or property.
 - 3. Brace, shore, and protect existing structures when excavations are made adjacent to the existing structures or within a distance that they will be affected by the excavation. Underpin adjacent structures when excavations are carried to a depth that will require it by the NYC Building Code or when indicated on Drawings.
 - 4. Provide materials for work in good serviceable order.
- B. Inspection and Code Requirements
 - 1. Underpinning for protection of excavations and protection of adjacent structures and the public is the responsibility of the Contractor and shall comply with the requirements of the 2008 NYC Building Code; Chapter 33, Section BC 3309 Protection of Adjoining Property.
 - 2. The most stringent requirements of the Building Code, Contract Drawings, Specifications, or any authorities having jurisdiction shall govern this Work.

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3. Coordinate Work of this Section with Work of all other Divisions so as to properly, and completely, install all Work as drawn or specified.
4. The Contractor shall engage the services of a Licensed Professional Engineer to prepare details of underpinning, and other construction required for protection of excavations and support of adjacent properties or buildings. These drawings shall be submitted to the Commissioner for general review, which does not relieve the Contractor's Engineer of responsibility for the adequacy of the design.
5. The Contractor's Engineer shall file Form PW-1 with the Building Department, thereby becoming the Engineer of Record for such protection work and is responsible for stability of all slopes and bracing and underpinning and for preparation of all design and shop drawings and their approval by the Building Department. Commissioner will engage a Special Inspection Agency to perform the Special Inspections described in Sections BC 1704.9.1, BC 1704.19, and BC 3304.4.1 of the 2008 NYC Building Code for such work.
6. No earthwork within the property line shall commence unless Contractor or permit holder notifies the Department of Building via phone or electronically within 24 to 48 hours prior to the commencement of such work. The Contractor shall preserve and protect from damage any adjoining structures.
7. Obtain approval and permit from the NYC Department of Building prior to commencement of any such excavation activity, as building is within 200 feet from a TA structure.

3.03 EXCAVATION

- A. Excavate earth as required for the Work.
- B. Install and maintain all erosion and sedimentation controls during all earthwork operations as specified on the Contract Drawings or as directed by local officials. If the erosion and sedimentation controls specified by the local officials are more stringent than those specified on the Contract Drawings contact the Commissioner.
- C. Maintain sides and slopes of excavations in a safe condition until completion of backfilling. Comply with

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Code of Federal Regulations Title 29 - Labor, Part 1926 (OSHA).

- D. Stockpile excavated materials classified as suitable material where directed, until required for fill. Place, grade, and shape stockpiles for proper drainage as approved by the Commissioner.
- E. Excavation for Structures: Conform to elevations, lines, and limits indicated. Excavate to a vertical tolerance of plus or minus 1 inch. Extend excavation a sufficient lateral distance to provide clearance to execute the Work.
- F. Concrete Slabs, Floors and Bases: Excavate to the following depths below bottom of concrete for addition of select granular material:
 - 1. Interior Floors: 6 inches unless otherwise indicated.
 - 2. Exterior Slabs and Steps: 12 inches unless otherwise indicated.
- G. Unauthorized Excavations: Unless otherwise directed, backfill unauthorized excavation under footings, foundation bases, and retaining walls with compacted select granular material without altering the required footing elevation. Elsewhere, backfill and compact unauthorized excavation as specified for authorized excavation of the same classification, unless otherwise directed by the Commissioner.
 - 1. Unauthorized excavations under structural Work such as footings, foundation bases, and retaining walls shall be reported immediately to the Commissioner before any concrete or backfilling Work commences.
- H. Notify the Commissioner upon completion of excavation operations. Do not proceed with the Work until the excavation is inspected and approved. Inspection of the excavation by the Commissioner will be made on 3 working days notice.

3.04 DEWATERING

- A. Prevent surface and subsurface water from flowing into excavations and trenches and from flooding the site and surrounding area.
- B. Do not allow water to accumulate in excavations. Remove water from all excavations immediately to

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prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to the stability of subgrades and foundations. Furnish and maintain pumps, sumps, suction and discharge piping systems, and other system components necessary to convey the water away from the Site.

- C. Convey water removed from excavations, and rain water, to collecting or run-off area. Cut and maintain temporary drainage ditches and provide other necessary diversions outside excavation limits for each structure. Do not use trench excavations as temporary drainage ditches.
- D. Provide temporary controls to restrict the velocity of discharged water as necessary to prevent erosion and siltation of receiving areas.

3.05 PLACING FILL AND BACKFILL

- A. Surface Preparation of Fill Areas: Strip topsoil, remaining vegetation, and other deleterious materials prior to placement of fill. Remove all asphalt pavement in its entirety from areas requiring the placement of fill or break up old pavements to a maximum size of four inches. Prior to placement of fill, smooth out and compact areas where wheel rutting has occurred due to stripping or earthwork operations.
- B. Excavations: Backfill as promptly as practicable, but only after approval by the Commissioner. Do not backfill with excavated material unless it meets the requirements of this Section.
- C. Place backfill and fill materials in layers not more than 8 inches thick in loose depth unless otherwise specified. Before compaction, moisten or aerate each layer as necessary to facilitate compaction to the required density. Do not place backfill or fill material on surfaces that are muddy, frozen, or covered with ice.
 - 1. Place fill and backfill against foundation walls, and in confined areas (such as trenches) not easily accessible by larger compaction equipment, in maximum six inch thick (loose depth) layers.
- D. Prevent wedging action of backfill against structures by placing backfill uniformly around structure to approximately same elevation in each layer. Place backfill against walls of structures containing

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basements or crawl spaces only after the first floor structural members are in place.

- E. Under Interior Concrete Slabs:
 - 1. Up to Subgrade Surface Elevation: Place selected fill when fill or backfill is required.
 - 2. Subbase Material: Place six inches of select granular material over subgrade surface.
- F. Under Walks:
 - 1. Up to Subgrade Surface Elevation: Place selected fill when fill or backfill is required.
 - 2. Subbase Material: Place as indicated.

3.06 COMPACTION

- A. All materials with exception of open graded stone:
 - 1. Compact each layer of fill and backfill for the following area classifications to the percentage of maximum density specified below and at a moisture content suitable to obtain the required densities, but at not less than three percent drier or more than two percent wetter than the optimum content as determined by ASTM D 698 (Standard Proctor) or 1557 (Modified Proctor).
 - a. Structures (entire area within ten feet outside perimeter): 95 percent.
 - b. Concrete Slabs: 95 percent.
 - c. Walks: 95 percent.

3.07 GRADING

- A. Finish Grading: Finish surfaces free from irregular surface changes, and as follows:
 - 1. Walks: Place and compact subbase material as specified. Shape surface of areas to required line, grade and cross section, with the finish surface not more than 1/2 inch above or below the required subbase elevation.
 - 2. Building Slabs: Grade subbase material smooth and even, free of voids, compacted as specified to within 1/4 inch above or below required subbase elevation.

3.08 RESTORATION

- A. Restore walks, curbs, and other exterior surfaces damaged during performance of the Work to match the appearance and performance of existing corresponding surfaces as closely as practicable.

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3.09 DISPOSAL OF EXCESS AND UNSUITABLE MATERIALS

- A. Remove from State property and dispose of excess and unsuitable materials, including materials resulting from clearing and grubbing and removal of existing improvements.
- B. Transport excess and unsuitable materials, including materials resulting from clearing and grubbing and removal of existing improvements, to spoil areas on State property designated by the Commissioner, and dispose of such materials as directed.

3.10 FIELD QUALITY CONTROL

- A. Compaction Testing: Notify the Commissioner at least 3 working days in advance of all phases of filling and backfilling operations. Compaction testing will be performed by the Commissioner to ascertain the compacted density of the fill and backfill materials. Compaction testing will be performed on certain layers of the fill and backfill as determined by the Commissioner. If a compacted layer fails to meet the specified percentage of maximum density, the layer shall be re-compacted and will be retested. No additional material may be placed over a compacted layer until the specified density is achieved.

3.11 PROTECTION

- A. Protect graded areas from traffic and erosion, and keep them free of trash and debris.

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SECTION 312343
EPS GEOFOAM

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes expanded polystyrene (EPS) Geofoam.

1.02 REFERENCES

- A. ASTM D6817 - Standard Specification for Rigid, Cellular Polystyrene Geofoam.

1.03 SUBMITTALS

- A. Submit EPS Geofoam manufacturer's product literature and TechData, including:
1. Physical properties in compliance with ASTM D6817 Type specified.
 2. 10-year physical property warranty.
- B. Shop drawings showing EPS Geofoam block layout.
- C. Quality Assurance: Submit the following:
1. Test Compliance: Summary of test compliance with specified performance characteristics and physical properties.
 2. Certificates: Manufacturer shall supply a product certificate showing evidence of Third Party Quality Control.

1.04 DELIVERY, STORAGE & HANDLING

- A. Deliver EPS Geofoam labeled with material Type.
- B. Store above ground, and protected from moisture and sunlight prior to installation.
- C. Product should not be exposed to open flame or other ignition sources.

1.05 MANUFACTURER WARRANTY

- A. Provide EPS Geofoam 10-year warranty covering the long-term physical property of expanded polystyrene

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Geofoam.

PART 2 PRODUCTS

2.01 MANUFACTURERS/SUPPLIERS

- A. Thermal Foams, Inc., 2101 Kenmore Avenue, Buffalo, NY 14207
- B. Thermal Foams/Syracuse, Inc., 6173 South Bay Road, Cicero, NY 13039
- C. AFM Corporation, 17645 Juniper Path, Suite 260, Lakeville, MN 55044

2.02 EPS GEOFOAM

- A. Foam-Control EPS Geofoam in compliance with ASTM D6817.
 - 1. Foam-Control EPS Geofoam: ASTM D6817 Type EPS39.
- B. All Foam-Control EPS Geofoam blocks shall be treated by the manufacturer with a tested and proven termite treatment for below grade applications, 3 year minimum field exposure. The treatment shall be EPA registered, meet requirements of ICC ES AC239, and be recognized in an ICC ES report.

2.03 GEOGRIPPER PLATES

GeoGripper® plates shall be used to restrain EPS Geofoam from moving laterally in layer over layer applications. The GeoGripper plate shall be manufactured by AFM Corporation or approved equal. The plate shall be made of galvanized or stainless steel with two-sided multi-barbed design capable of piercing geofoam. Each plate shall be capable of a lateral holding strength of 60 lbs. Provide two plates for each 4' x 8' section of EPS block as a minimum to minimize block to block movement during installation.

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's EPS Geofoam

HARLEM SCHOOL OF THE ARTS,
PHASE II BUILDING RENOVATIONS

product data; including technical bulletins.

3.02 PREPARATION AND INSTALLATION

- A. Site Verification of Conditions: Verify conditions of substrate, grade and other conditions which affect installation of geof foam.
- B. Installation: Install geof foam under new concrete stairs as shown on the drawings

3.03 PROTECTION

- A. Protection: Protect installed product and finish surfaces from damage during construction as required.

END OF SECTION

HARLEM SCHOOL OF THE ARTS,
PHASE II BUILDING RENOVATIONS

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FMS ID: PV181HSA2



**THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS**

30-30 THOMSON AVENUE LONG ISLAND CITY, NEW YORK 11101-3045
TELEPHONE (718) 391-1000 WEBSITE www.nyc.gov/buildnyc

Contract for Furnishing all Labor and Material Necessary and Required for:

CONTRACT NO. 1 GENERAL CONSTRUCTION

Harlem School of the Arts, Phase II Building Renovations

LOCATION: 645 St. Nicholas Avenue
BOROUGH: Manhattan 10031
CITY OF NEW YORK

Contractor _____

Dated _____, 20____

Entered in the Comptroller's Office

First Assistant Bookkeeper _____

Dated _____, 20____





PROJECT ID: PV181HSA2

THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

30-30 THOMSON AVENUE
LONG ISLAND CITY, NEW YORK 11101-3045
TELEPHONE (718) 391-1000
WEBSITE www.nyc.gov/buildnyc

LAW

VOLUME 1 OF 3

BID BOOKLET

FOR FURNISHING ALL LABOR AND MATERIALS
NECESSARY AND REQUIRED FOR:

**Harlem School of the Arts, Phase II
Building Renovations**

LOCATION:
BOROUGH:
CITY OF NEW YORK

645 St. Nicholas Avenue
Manhattan 10031

CONTRACT NO. 1

GENERAL CONSTRUCTION

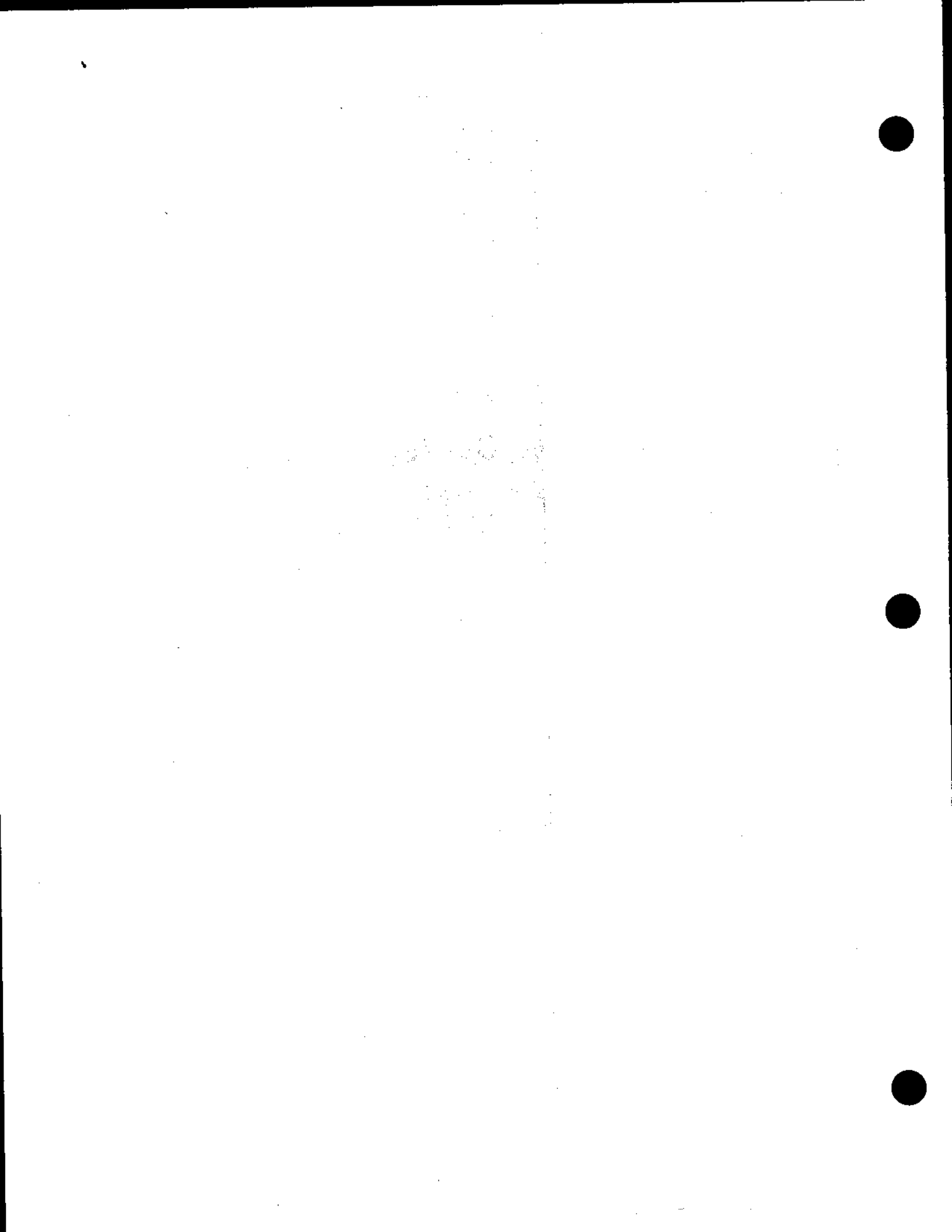
DCA

Greenman-Pedersen, Inc.



Date: May 27, 2015

5-188





June 27, 2016

CERTIFIED MAIL - RETURN RECEIPT REQUEST

A Aleem Construction Inc.
1629 Park Avenue, Ste 1B
New York, NY 10029

RE: FMS ID: PV181HSA2
E-PIN: 85015B0170001
DDC PIN: 8502015PV0018C
HARLEM SCHOOL OF THE ARTS, PHASE II
BUILDING RENOVATIONS--BOROUGH OF
MANHATTAN
NOTICE OF AWARD

Dear Contractor:

You are hereby awarded the above referenced contract based upon your bid in the amount of \$2,949,964.00 submitted at the bid opening on November 18, 2015. Within ten (10) days of your receipt of this notice of award, you are required to take the actions set forth in Paragraphs (1) through (3) below. For your convenience, attached please find a copy of Schedule A of the General Conditions to the Contract, which sets forth the types and amounts of insurance coverage required for this contract.

- (1) Execute four copies of the Agreement in the Contracts Unit, 30-30 Thomson Avenue, 1st Floor, Long Island City, New York (IDCNY Building). A Commissioner of Deeds will be available to witness and notarize your signature. The Agreement must be signed by an officer of the corporation or a partner of the firm.
- (2) Submit to the Contracts Unit four properly executed performance and payment bonds. If required for this contract, copies of performance and payment bonds are attached.
- (3) Submit to the Contracts Unit the following insurance documentation: (a) original certificate of insurance for general liability in the amount required by Schedule A, and (b) original certificates of insurance or other proof of coverage for workers' compensation and disability benefits, as required by New York State Law. The insurance documentation specified in this paragraph is required for registration of the contract with the Comptroller's Office.



Department of
Design and
Construction

On or before the contract commencement date, you are required to submit all other certificates of insurance and/or policies in the types and amounts required by Schedule A. Such certificates of Insurance and/or policies must be submitted to the Agency Chief Contracting Office, Attention: Risk Manager, Fourth Floor at the above indicated department address.

Your attention is directed to the section of the Information for Bidders entitled "Failure to Execute Contract". As indicated in this section, in the event you fail to execute the contract and furnish the required bonds within the (10) days of your receipt of this notice of award, your bid security will be retained by the City and you will be liable for the difference between your bid price and the price for which the contract is subsequently awarded, less the amount of the bid security retained.

Sincerely,

A handwritten signature in black ink that reads "Lorraine Holley". The signature is written in a cursive, flowing style.

Lorraine Holley

#2

**BID FORM
THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS**

**BID FOR FURNISHING ALL LABOR AND
MATERIAL NECESSARY AND REQUIRED FOR:**

PROJECT ID: PV18IHSA2

**Harlem School of the Arts, Phase II Building Renovations
645 St. Nicholas Avenue
Manhattan 10031**

Name of Bidder: A. Aleem Construction Inc.

Date of Bid Opening: November 18th, 2015

Bidder is: (Check one, whichever applies) Individual () Partnership () Corporation (X)

Place of Business of Bidder: 1629 Park Ave, Ste 1B, New York, NY 10029

Bidder's Telephone Number: (212) 534-5500 Bidder's Fax Number: (212) 534-5755

Bidder's Email Address: Abulaleem@aaleemconstruction.com

Residence of Bidder (If Individual): _____

If Bidder is a Partnership, fill in the following blanks:

Names of Partners

Residence of Partners

If Bidder is a Corporation, fill in the following blanks:

Organized under the laws of the State of New York

Name and Home Address of President: Mervyn Frank
134-23 241st Street, Rosedale, NY 11422

Name and Home Address of Secretary: _____

Name and Home Address of Treasurer: _____

BID FORM

PROJECT ID: PV181HSA2

TOTAL BID PRICE: In the space provided below, the Bidder shall indicate the total bid price in figures.

- A. **LUMP SUM PRICE** - Total price for all labor and material for all required work, excluding item (B) set forth below. Total Price shall include all costs and expenses, i.e. labor, material overhead and profit for all the Work, described and shown in the drawings and specifications.

Total Price For Labor

Total Price for Material Sold and Delivered

\$ _____ +

\$ _____

Total Price for Item A= \$ 2,934,964

- B. **ALLOWANCE for Incidental Asbestos Abatement**
(Section 028013 of the Specifications)

\$15,000.00

TOTAL BID PRICE (Add A + B)
(a/k/a BID PROPOSAL)

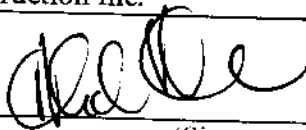
\$ \$2,949,964
BB 11/18/15

BIDDER'S SIGNATURE AND AFFIDAVIT

* **SUBCONTRACTOR IDENTIFICATION:** You MUST complete and submit the form entitled "Bidder's Identification of Subcontractors" (page 19) at the time you submit your bid. You must submit this form in a separate, sealed envelope (BID ENVELOPE #2). In the event an award of contract is not made to the Bidder, the Bidder hereby authorizes the Agency to shred the form entitled "Bidder's Identification of Subcontractors". X Yes No

Bidder: A. Aleem Construction Inc.

By: _____



(Signature of Partner or corporate officer)



Attest:
(Corporate Seal)

Secretary of Corporate Bidder

Affidavit on the following page should be subscribed and sworn to before a Notary Public

BID FORM (TO BE NOTARIZED)

AFFIDAVIT WHERE BIDDERS IS AN INDIVIDUAL

STATE OF NEW YORK, COUNTY OF _____ ss:

I am the person described in and who executed the foregoing bid, and the several matters therein stated are in all respects true.

(Signature of the person who signed the Bid)

Subscribed and sworn to before me this
day of _____

Notary Public

AFFIDAVIT WHERE BIDDERS IS A PARTNERSHIP

STATE OF NEW YORK, COUNTY OF _____ ss:

I am a member of _____ being duly sworn says:
_____ the firm described in and which executed the foregoing bid,
subscribed the name of the firm thereto on behalf of the firm, and the several matters therein stated are in all respects true.

(Signature of Partner who signed the Bid)

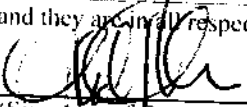
Subscribed and sworn to before me this
day of _____

Notary Public

AFFIDAVIT WHERE BIDDERS IS A CORPORATION

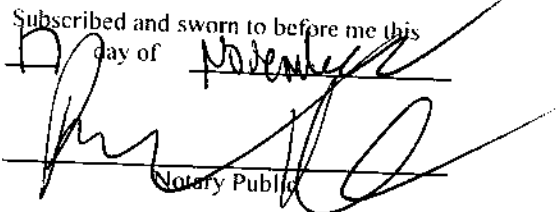
STATE OF NEW YORK, COUNTY OF _____ ss:

I am the Mervyn Frank being duly sworn says:
President of the above named corporation whose name is subscribed to and which executed
the foregoing bid. I reside at 134-23 241st Street, Rosedale, NY 11422
I have knowledge of the several matters therein stated, and they are in all respects true.

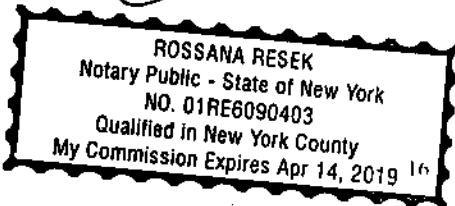


(Signature of Corporate Officer who signed the Bid)

Subscribed and sworn to before me this
day of November



Notary Public



AFFIRMATION

The undersigned bidder affirms and declares that said bidder is not in arrears to the City of New York upon debt, contract or taxes and is not a defaulter, as surety or otherwise, upon obligation to the City of New York, and has not been declared not responsible, or disqualified, by any agency of the City of New York, nor is there any proceeding pending relating to the responsibility or qualification of the bidder to receive public contracts except None

(If none, the bidder shall insert the word "None" in the space provided above.)

Full Name of Bidder: A. Aleem Construction Inc.

Address: 1629 Park Ave, Ste 1B

City: New York

State: NY

Zip Code: 10029

CHECK ONE BOX AND INCLUDE APPROPRIATE NUMBER:


A - Individual or Sole Proprietorship *
SOCIAL SECURITY NUMBER

B - Partnership, Joint Venture or other unincorporated organization
EMPLOYER IDENTIFICATION NUMBER

C - Corporation
EMPLOYER IDENTIFICATION NUMBER

113091138

By: _____

Signature: 

Title: President

If a corporation, place seal here

This affirmation must be signed by an officer or duly authorized representative.

* Under the Federal Privacy Act the furnishing of Social Security Numbers by bidders on City contracts is voluntary. Failure to provide a Social Security Number will not result in a bidder's disqualification. Social Security Numbers will be used to identify bidders, proposers or vendors to ensure their compliance with laws, to assist the City in enforcement of laws, as well as to provide the City a means of identifying of businesses which seek City contracts.

Qualification Form

Project ID: PVI81HSA2

List previous projects completed to meet the special experience requirements for this contract. Please photocopy this form for submission of all required projects.

Name of Contractor: A. Aleem Construction Inc.

Name of Project: Ennis Francis II

Location of Project: 225 W 123rd St, New York, Ny

Owner or Owner's representative (Architect or Engineer) who is familiar with the work performed:

Name: Abyssinian Development Corp. (James Howard)

Title: Senior VP of Real Estate Phone Number: (646) 442-6570

Brief description of work completed: New Construction of a new 8-Story 60 Unit affordable housing project with 37 underground parking spaces

Was the work performed as a prime or a subcontractor: Prime

Amount of Contract: \$19.3 Million

Date of Completion: June 2015

Name of Contractor: A. Aleem Construction Inc.

Name of Project: 149th St Cluster

Location of Project: 208,236-238 W 149th St, New York, NY

Owner or Owner's representative (Architect or Engineer) who is familiar with the work performed:

Name: HCCI (Jelain Hendrickson)

Title: Owners Representative Phone Number: (212) 283-1377

Brief description of work completed: Gut rehabilitation of a cluster of existing city owned apartment buildings for low and medium income residents totaling 78 units.

Was the work performed as a prime or a subcontractor: Prime

Amount of Contract: \$12.2 Million

Date of Completion: December 2012

Qualification Form

Project ID: PV181HSA2

List previous projects completed to meet the special experience requirements for this contract. Please photocopy this form for submission of all required projects.

Name of Contractor: A. Aleem Construction Inc.

Name of Project: 132nd St Cluster

Location of Project: _____

Owner or Owner's representative (Architect or Engineer) who is familiar with the work performed:

Name: 132nd St LLC (Francis Synmoie)

Title: Owners Representative Phone Number: (212) 987-8088

Brief description of work completed: Gut Rebalitation of City owned apartment buildings

Was the work performed as a prime or a subcontractor: Prime

Amount of Contract: \$12.2 Million

Date of Completion: July 2011

Name of Contractor: A. Aleem Construction Inc.

Name of Project: 2512 7th Ave Project

Location of Project: _____

Owner or Owner's representative (Architect or Engineer) who is familiar with the work performed:

Name: 2512 7th Avenue Housing Development Fund Corp. (Majid Mannan)

Title: Owners Representative Phone Number: (212) 662-220

Brief description of work completed: Gut Rehabilitation of City owned apartment buildings.

Was the work performed as a prime or a subcontractor: Prime

Amount of Contract: 3.2 Million

Date of Completion: July 2011

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Harlem School of the Arts, Phase II Building Renovations
 Location: 645 St. Nicholas Avenue, NY NY 10031
 Bidder:

DDC ID: PV181HSA2
 Sponsor Agency: DCA

CSI Number	DESCRIPTION	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost of Materials and Labor
CONTRACT 1 - GENERAL CONSTRUCTION WORK								
Division 1 GENERAL REQUIREMENTS								
01 0000	GENERAL REQUIREMENTS							
	Mobilization and general requirements	1	LS					\$ 582,000.00
	Subtotal							\$ 582,000.00
11010	Summary of Work (Included w/ General Conditions)							
Division 2 EXISTING CONDITIONS								
02 4119	Selective Removals & Demolition							
	Exterior Ramp and Stairs							
	Interior Stairs with handrail	360	SF	\$ 5.00	\$ 1,800.00	\$ 10.00	\$ 3,600.00	\$ 5,400.00
	Sawcut floor and roof openings	30	SF	\$ 15.00	\$ 450.00	\$ 25.00	\$ 750.00	\$ 1,200.00
	CMU block & brick wall	355	SF	\$ 10.00	\$ 3,550.00	\$ 50.00	\$ 17,750.00	\$ 21,300.00
	Gypsum Board	235	SF	\$ 2.00	\$ 470.00	\$ 20.00	\$ 4,700.00	\$ 5,170.00
	Double Doors and Frames	300	SF	\$ 1.00	\$ 300.00	\$ 2.00	\$ 600.00	\$ 900.00
	Single Doors and Frames	2	EA	\$ 100.00	\$ 200.00	\$ 250.00	\$ 500.00	\$ 700.00
	Skylight	3	EA	\$ 75.00	\$ 225.00	\$ 150.00	\$ 450.00	\$ 675.00
	Miscellaneous Demolition	2	EA	\$ 200.00	\$ 400.00	\$ 400.00	\$ 800.00	\$ 1,200.00
	Subtotal							\$ 12,760.00
Division 3 CONCRETE								
03 3000	Cast-In-Place Concrete							
	Exterior concrete ramp (S5 CF)	20	LF	\$ 400.00	\$ 8,000.00	\$ 600.00	\$ 12,000.00	\$ 20,000.00
	Interior concrete stairs and landing	90	SF	\$ 15.00	\$ 1,350.00	\$ 150.00	\$ 13,500.00	\$ 14,850.00
	Interior concrete stairs	2	CY	\$ 300.00	\$ 600.00	\$ 2,500.00	\$ 5,000.00	\$ 5,600.00
	Elevator wall foundation and pit	8	CY	\$ 450.00	\$ 3,600.00	\$ 3,500.00	\$ 28,000.00	\$ 31,600.00
	Underpinning	1	LS	\$ 5,000.00	\$ 5,000.00	\$ 25,000.00	\$ 25,000.00	\$ 30,000.00
	Subtotal							\$ 70,585.00
	Subtotal							\$ 70,585.00

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Harlem School of the Arts, Phase II Building Renovations
 Location: 645 St. Nicholas Avenue, NY NY 10031
 Bidder:

DDC ID: PV181HSA2
 Sponsor Agency: DCA

CSI Number	DESCRIPTION	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
093013	Ceramic Tile	280	SF	\$ 10.00	\$ 2,800.00	\$ 40.00	\$ 11,200.00	\$ 14,000.00
	Cove Base 4 1/4x4 1/4	56	LF	\$ 8.00	\$ 448.00	\$ 25.00	\$ 1,400.00	\$ 1,848.00
	Subtotal							\$ 15,848.00
095300	Suspended Acoustical Ceiling System	105	SF	\$ 7.00	\$ 735.00	\$ 60.00	\$ 6,300.00	\$ 7,035.00
	Suspended Acoustical Ceiling System							\$ 7,035.00
096519	Resilient Flooring	145	SF	\$ 10.00	\$ 1,450.00	\$ 40.00	\$ 5,800.00	\$ 7,250.00
	Porcelain Floor Tiles							\$ 7,250.00
09 9000	Painting	1750	SF	\$ 1.00	\$ 1,750.00	\$ 3.00	\$ 5,250.00	\$ 7,000.00
	Painting							\$ 7,000.00
Division 10	SPECIAL TIES							\$ 7,000.00
102113	Metal Toilet Compartments	1	EA	\$ 2,500.00	\$ 2,500.00	\$ 1,000.00	\$ 1,000.00	\$ 3,500.00
	Metal Toilet Compartments							\$ 3,500.00
102813	Toilet and Bath Accessories	1	LS	\$ 700.00	\$ 700.00	\$ 700.00	\$ 700.00	\$ 1,400.00
	Toilet and Bath Accessories							\$ 1,400.00
Division 13	SPECIAL CONSTRUCTION							\$ 1,400.00
134813	Acoustical Panel Systems	1525	SF	\$ 20.00	\$ 30,500.00	\$ 30.00	\$ 45,750.00	\$ 76,250.00
	Acoustical Panels, 12' Hot Dip Galv. 3 lb/sf Fill							\$ 76,250.00
Division 14	CONVEYING EQUIPMENT							\$ 76,250.00
142420	Hydraulic Vertical Platform Lift	1	LS	\$ -	\$ -	\$ -	\$ -	\$ -
	Platform Vertical Lift (Based on Savaria V1504, type 2), pitless 36"x54", 750 Lbs, 21" travel with built in control, 3" ramp Electrical Material (Cab)							\$ -
142423	FLOOR MATS AND FRAMES	1	LS	\$ -	\$ -	\$ -	\$ -	\$ -
	Hydraulic Passenger Elevator							\$ 19,800.00
	Controller							\$ -
	Power Unit							\$ -
	Holeless Jack Assembly							\$ -
	Landing/Leveling System							\$ -
	Cab Platform							\$ -
	Cab Enclosure							\$ -
	Car Door Sill (2)							\$ -
	Cab Flooring							\$ -

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project : Harlem School of the Arts, Phase II Building Renovations
 Location: 645 St. Nicholas Avenue, NY NY 10031
 Bidder:

DDC ID: PV181HSA2
 Sponsor Agency: DCA

CSI Number	DESCRIPTION	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Guides	1	LS	\$	\$	\$	\$	\$
	Car Door Operator & Clutch (2)	1	LS	\$	\$	\$	\$	\$
	Car Door Track and Hangers (2 sets)	1	LS	\$	\$	\$	\$	\$
	Car Door Protection Infrared Beam (2)	1	LS	\$	\$	\$	\$	\$
	Car Pushbutton Station	1	LS	\$	\$	\$	\$	\$
	Car Travel Lantern (2)	1	LS	\$	\$	\$	\$	\$
	Car Position Indicator	1	LS	\$	\$	\$	\$	\$
	Emergency Communication System	1	LS	\$	\$	\$	\$	\$
	Top of Car Inspection Box	1	LS	\$	\$	\$	\$	\$
	Hall Push Buttons w/Position Indicators (3)	1	LS	\$	\$	\$	\$	\$
	Hall Door Entrances Complete (3)	1	LS	\$	\$	\$	\$	\$
	Hoistway Limit Switches (Top & Bottom)	1	LS	\$	\$	\$	\$	\$
	Pit Stop Switch	1	LS	\$	\$	\$	\$	\$
	Traveling Cable	1	LS	\$	\$	\$	\$	\$
	Electrical Material (Hoistway)	1	LS	\$	\$	\$	\$	\$
	Electrical Material (Motor Room)	1	LS	\$	\$	\$	\$	\$
	Electrical Material (Cab)	1	LS	\$	\$	\$	\$	\$
	Pit Steel & Buffers	1	LS	\$	\$	\$	\$	\$
	Pit Ladder	1	LS	\$	\$	\$	\$	\$
	Scavenger Pump	1	LS	\$	\$	\$	\$	\$
	Adjusting and Testing	1	LS	\$	\$	\$	\$	\$
	Miscellaneous Elevator Work	1	LS	\$	\$	\$	\$	\$
	Subtotal			\$	\$	\$	\$	\$
Division 21	FIRE PROTECTION							
	Subtotal							\$ 230,000.00
211313	Sprinkler Systems							
	SPRINKLER PIPING w/S FITTINGS & HANGERS							\$ 25,000.00
	1" Pipe							
	Sprinkler Heads	20	FT	5	100	30	600	\$ 700.00
	Water Flow Switch	1	EA	38	38	90	90	\$ 128.00
	Tamper Switch	1	EA	295	295	350	350	\$ 645.00
	Testing	1	EA	190	190	80	80	\$ 270.00
	MISC	1	EA	500	500	500	500	\$ 500.00
	Subtotal				665	790	790	\$ 1,455.00
	Subtotal							\$ 3,698.00
Division 22	PLUMBING							
220410	Plumbing Piping							
	4" Storm Piping -No-Hub C.I. W/ Fittings & Hangers	70	LF	9	630	7	4410	\$ 5,040.00
	1/2" Copper Piping - Type L-Water	100	LF	5	500	11	1100	\$ 1,600.00
	3/4" Copper Piping - Type L-Water	150	LF	7	1050	11	1650	\$ 2,700.00
	1" Copper Piping - Type L-Water	50	LF	12	600	23	1150	\$ 1,750.00
	1-1/4" Copper Piping - Type L-Water	150	LF	14	2100	31	4650	\$ 6,750.00
	1" N. Gas - Sch. 40 W/ Fittings & Hangers	150	LF	12	1800	23	3450	\$ 5,250.00
	1-1/2" N. Gas - Sch. 40 W/ Fittings & Hangers	50	LF	17	850	37	1850	\$ 2,700.00
	2" N. Gas - Sch. 40 W/ Fittings & Hangers	20	LF	24	480	41	820	\$ 1,300.00

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Harlem School of the Arts, Phase II Building Renovations
 Location: 645 St. Nicholas Avenue, NY NY 10031
 Bidder:

DDC ID: PV181HSA2
 Sponsor Agency: DCA

CSI Number	DESCRIPTION	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Water Closets w/ Carrier, Flush Valve, Etc.	2	EA	480	960	240	480	\$ 1,440.00
	Urinals w/Carrier, Flush Valve	1	EA	350	350	210	210	\$ 560.00
	Lavatories w/ Supports, Faucet, Drain, Etc.	2	EA	370	740	260	520	\$ 890.00
	Floor Drains	1	EA	290	290	450	450	\$ 740.00
	Subtotal							\$ 3,630.00
Division 23	HVAC							
	Subtotal							\$ 1,056,000
Division 26	ELECTRICAL							
	Subtotal							\$ 173,000.00
TOTAL CONTRACT 1 - GENERAL CONSTRUCTION WORK								\$ 2,934,964.00

SAFETY QUESTIONNAIRE

The bidder must include, with its bid, all information requested on this Safety Questionnaire. Failure to provide a completed and signed Safety Questionnaire at the time of bid opening may result in disqualification of the bid as non-responsive.

1. Bidder Information:

Company Name: A. Aleem Construction Inc.

DDC Project Number: PV181HSA2

Company Size: X Ten (10) employees or less
 _____ Greater than ten (10) employees

Company has previously worked for DDC _____ YES X NO

2. Type(s) of Construction Work

TYPE OF WORK	LAST 3 YEARS	THIS PROJECT
General Building Construction	<u> X </u>	_____
Residential Building Construction	<u> X </u>	_____
Nonresidential Building Construction	<u> X </u>	_____
Heavy Construction, except building	_____	_____
Highway and Street Construction	_____	_____
Heavy Construction, except highways	_____	_____
Plumbing, Heating, HVAC	_____	_____
Painting and Paper Hanging	_____	_____
Electrical Work	_____	_____
Masonry, Stonework and Plastering	_____	_____
Carpentry and Floor Work	_____	_____
Roofing, Siding, and Sheet Metal	_____	_____
Concrete Work	_____	_____
Specialty Trade Contracting	_____	_____
Asbestos Abatement	_____	_____
Other (specify)	_____	_____
_____	_____	_____

3. Experience Modification Rate:

The Experience Modification Rate (EMR) is a rating generated by the National Council of Compensation Insurance (NCCI). This rating is used to determine the contractor's premium for worker's compensation insurance. The contractor may obtain its EMR by contacting its insurance broker or the NCCI. If the contractor cannot obtain its EMR, it must submit a written explanation as to why.

The Contractor must indicate its Intrastate and Interstate EMR for the past three years. [Note: For contractors with less than three years of experience, the EMR will be considered to be 1.00].

YEAR	INTRASTATE RATE	INTERSTATE RATE
<u>2015</u>	_____	<u>.89</u>
<u>2014</u>	_____	<u>.87</u>
<u>2013</u>	_____	<u>.97</u>

If the Intrastate and/or Interstate EMR for any of the past three years is greater than 1.00, the contractor must attach, to this questionnaire, a written explanation for the rating and identify what corrective action was taken to correct the situation resulting in that rating.

4. OSHA Information:

YES NO

Contractor has received a willful violation issued by OSHA or New York City Department of Buildings (NYCDOB) within the last three years.

YES NO

Contractor has had an incident requiring OSHA notification within 8 hours (all work-related fatalities) or an incident requiring OSHA notification within 24 hours (all work-related impatient hospitalizations, all amputations and all losses of an eye).

The Occupational Safety and Health Act (OSHA) of 1970 requires employers with ten or more employees, on a yearly basis to complete and maintain on file the form entitled "Log of Work-related Injuries and Illnesses". This form is commonly referred to as the OSHA 300 Log (OSHA 200 Log for 2001 and earlier).

The OSHA 300 Log must be submitted for the last three years for contractors with more than ten employees.

The Contractor must indicate the total number of hours worked by its employees, as reflected in payroll records for the past three years.

The contractor must submit the Incident Rate for Lost Time Injuries (the Incident Rate) for the past three years. The Incident Rate is calculated in accordance with the formula set forth below. For each given year, the total number of incidents is the total number of non-fatal injuries and illnesses reported on the OSHA 300 Log. The 200,000 hours represents the equivalent of 100 employees working forty hours a week, fifty weeks per year.

Incident Rate =
$$\frac{\text{Total Number of Incidents} \times 200,000}{\text{Total Number of Hours Worked by Employees}}$$

YEAR	TOTAL NUMBERS OF HOURS WORKED BY EMPLOYEES	INCIDENT RATE
_____	_____	N/A
_____	_____	N/A
_____	_____	N/A

If the contractor's Incident Rate for any of the past three years is one point higher than the Incident Rate for the type of construction it performs (listed below), the contractor must attach, to this questionnaire, a written explanation for the relatively high rate.

General Building Construction	8.5
Residential Building Construction	7.0
Nonresidential Building Construction	10.2
Heavy Construction, except building	8.7
Highway and Street Construction	9.7
Heavy Construction, except highways	8.3
Plumbing, Heating, HVAC	11.3
Painting and Paper Hanging	6.9
Electrical Work	9.5
Masonry, Stonework and Plastering	10.5
Carpentry and Floor Work	12.2
Roofing, Siding, and Sheet Metal	10.3
Concrete Work	8.6
Specialty Trade Contracting	8.6

5. Safety Performance on Previous DDC Project(s)

YES NO Contractor previously audited by the DDC Office of Site Safety.
 DDC Project Number(s): N/A

YES NO Accident on previous DDC Project(s).
 DDC Project Number(s): N/A

YES NO Fatality or Life-altering Injury on DDC Project(s) within the last three years.
 [Examples of a life-altering injury include loss of limb, loss of a sense (e.g., sight, hearing), or loss of neurological function].
 DDC Project Number(s): N/A

Date: 11/17/2015

By: 
 (Signature of Owner, Partner, Corporate Officer)

Title: President

**BID BOND 1
FORM OF BID BOND**

KNOW ALL MEN BY THESE PRESENTS. That we, _____

A. Aleem Construction Co., Inc.
1629 Park Avenue, Suite 1N, New York, NY 10029

hereinafter referred to as the "Principal", and _____

Endurance American Insurance Company
750 Third Avenue, 2nd Floor, New York, NY 10017

hereinafter referred to as the "Surety" are held and firmly bound to THE CITY OF NEW YORK, hereinafter referred to as the "CITY", or to its successors and assigns in the penal sum of

Ten Percent of Amount Bid

(\$ 10%), Dollars lawful money of the United States, for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Whereas, the Principal is about to submit (or has submitted) to the City the accompanying proposal, hereby made a part hereof, to enter into a contract in writing for Harlem School of the Arts. Phase II Renovations,
Manhattan, NY - Project #PV181HSA2

NOW, THEREFORE, the conditions of this obligation are such that if the Principal shall not withdraw said Proposal without the consent of the City for a period of forty-five (45) days after the opening of bids and in the event of acceptance of the Principal's Proposal by the City, if the Principal shall:

(a) Within ten (10) days after notification by the City, execute in quadruplicate and deliver to the City all the executed counterparts of the Contract in the form set forth in the Contract Documents, in accordance with the proposal as accepted, and

(b) Furnish a performance bond and separate payment bond, as may be required by the City, for the faithful performance and proper fulfillment of such Contract, which bonds shall be satisfactory in all respects to the City and shall be executed by good and sufficient sureties, and

(c) In all respects perform the agreement created by the acceptance of said Proposal as provided in the Information for Bidders, bound herewith and made a part hereof, or if the City shall reject the aforesaid Proposal, then this obligation shall be null and void; otherwise to remain in full force and effect.

BID BOND 2

In the event that the Proposal of the Principal shall be accepted and the Contract be awarded to him the Surety hereunder agrees subject only to the payment by the Principal of the premium therefore, if requested by the City, to write the aforementioned performance and payment bonds in the form set forth in the Contract Documents.

It is expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

There shall be no liability under this bond if, in the event of the acceptance of the Principal's Proposal by the City, either a performance bond or payment bond, or both, shall not be required by the City on or before the 30th day after the date on which the City signs the Contract.

The surety, for the value received, hereby stipulates and agrees that the obligations of the Surety and its bond shall in no way be impaired or affected by any postponements of the date upon which the City will receive or open bids, or by any extensions of time within which the City may accept the Principal's Proposal, or by any waiver by the City of any of the requirements of the Information for Bidders, and the Surety hereby waives notice of any such postponements, extensions, or waivers.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers the 6th day of November, 2015.

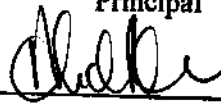
(Seal)

A. Aleem Construction Co., Inc.

(L.S.)

Principal

By:



(Seal)

Endurance American Insurance Company

Surety

By:

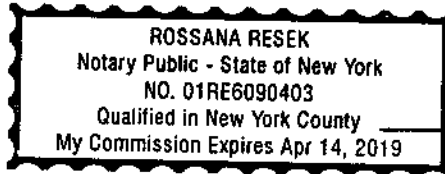
Fern Perry

Attorney-in-Fact

BID BOND 3

ACKNOWLEDGEMENT OF PRINCIPAL, IF A CORPORATION

State of New York County of _____ ss:
On this 17 day of 2015, _____, before me personally came
Mervyn Frank to me known, who, being by me duly sworn, did depose and say that he
resides at 134-23 241st Street, Rosedale, NY
that he is the President of A. Aleem Construction Co., Inc.
the corporation described in and which executed the foregoing instrument; that he knows the seal of said
corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the
directors of said corporation, and that he signed his name thereto by like order.



[Signature]
Notary Public

ACKNOWLEDGEMENT OF PRINCIPAL, IF A PARTNERSHIP

State of _____ County of _____ ss:
On this _____ day of _____, _____, before me personally appeared
_____ to me known and known to me to be one of the members of the firm of
_____ described in and who executed the foregoing instrument, and he
acknowledged to me that he executed the same as and for the act and deed of said firm.

Notary Public

ACKNOWLEDGEMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____ County of _____ ss:
On this _____ day of _____, _____, before me personally appeared
_____ to me known and known to me to be the person described in and who
executed the foregoing instrument and acknowledged that he executed the same.

Notary Public

AFFIX ACKNOWLEDGEMENTS AND JUSTIFICATION OF SURETIES

ACKNOWLEDGMENT OF SURETY

STATE OF NEW YORK }
COUNTY OF NASSAU } ^{ss:}

On November 6, 2015 before me personally came Fern Perry to me known who, being by me duly sworn, did depose and say that he/she resides at 255 Executive Drive, Plainview, New York 11803, that he/she is the Attorney-In-Fact of Endurance American Insurance Company the corporation described in and which executed the foregoing instrument; and that he/she signed his/her name thereto by order of the Board of Directors of said corporation.



Notary Public
Peter Henry
Notary Public State of NY
No. 01HE4784829
Qualified in Nassau County
Commission Expires January 31, 2018

ENDURANCE AMERICAN INSURANCE COMPANY

BID0116002468
Seal Number: 1

POWER OF ATTORNEY

Know all Men by these Presents, that ENDURANCE AMERICAN INSURANCE COMPANY, a Delaware corporation (the "Corporation"), with offices at 750 Third Avenue, New York, New York 10017, has made, constituted and appointed and by these presents, does make, constitute and appoint

ROBERT FINNELL, FERN PERRY, DEBORAH L. SEVERIN, JANICE R. FISCINA, JENNIFER LAURA JOHNSTON-OGEKA, ROSANNE CALLAHAN, PETER HENRY

its true and lawful Attorney(s)-in-fact, at PLAINVIEW in the State of NY and each of them to have full power to act without the other or others, to make, execute, seal and deliver for and on its behalf bonds, undertakings or obligations in surety or co-surety with others, also to execute and deliver on its behalf renewals, extensions, agreements, waivers, consents or stipulations relating to such aforesaid bonds, undertakings or obligations provided, however, that no single bond or undertaking so made, executed and delivered shall obligate the Corporation for any portion of the penal sum thereof in excess of the sum of SEVEN MILLION FIVE HUNDRED THOUSAND Dollars (\$7,500,000.00).

Such bonds and undertakings for said purposes, when duly executed by said attorney(s)-in-fact, shall be binding upon the Corporation as fully and to the same extent as if signed by the President of the Corporation under its corporate seal attested by its Corporate Secretary.261

This appointment is made under and by authority of certain resolutions adopted by the Board of Directors of the Corporation by unanimous written consent on the 21st day of July, 2011, a copy of which appears below under the heading entitled "Certificate".

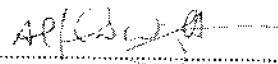
261
This Power of Attorney is signed and sealed by facsimile under and by authority of the following resolution adopted by the Board of Directors of the Corporation by unanimous written consent on the 21st day of July, 2011 and said resolution has not since been revoked, amended or repealed:

RESOLVED, that in granting powers of attorney pursuant to certain resolutions adopted by the Board of Directors of the Corporation by unanimous written consent on the 21st day of July, 2011, the signature of such directors and officers and the seal of the Corporation may be affixed to any such power of attorney or any certificate relating thereto by facsimile, and any such power of attorney or certificate bearing such facsimile signature or seal shall be valid and binding upon the Corporation in the future with respect to any bond or undertaking to which it is attached.

This Power of Attorney shall expire and all authority hereunder shall terminate without notice at 12:01 a.m. (Standard Timer where said attorney(s)-in-fact is authorized to act.)
MAY 17TH, 2016.

IN WITNESS WHEREOF, the Corporation has caused these presents to be duly signed and its corporate seal to be hereunto affixed and attested this 18TH day of MAY, 2015 at New York, New York.
(Corporate Seal)

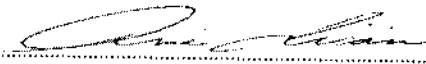
ENDURANCE AMERICAN INSURANCE COMPANY

ATTEST 
Alfred N. Wright, Senior Vice President

By 
Ronald Diggs, Vice President

STATE OF NEW YORK ss: MANHATTAN
COUNTY OF NEW YORK

On the 18TH day of MAY, 2015 before me personally came RONALD DIGGS to me known, who being by me duly sworn, did depose and say that (s)he resides in HELLETTOWN, PENNSYLVANIA that (s)he is a VICE PRESIDENT of ENDURANCE AMERICAN INSURANCE COMPANY, the corporation described in and which executed the above instrument; that (s)he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that (s)he signed his (her) name thereto by like order.
(Notarial Seal)


Anie Licari, Notary Public - My Commission Expires: October 29, 2015

CERTIFICATE

STATE OF NEW YORK ss: MANHATTAN
COUNTY OF NEW YORK

I, Doug Worman, the Chief Executive Officer of ENDURANCE AMERICAN INSURANCE COMPANY, a Delaware Corporation (the "Corporation"), hereby certify:

1. That the original power of attorney of which the foregoing is a copy was duly executed on behalf of the Corporation and has not since been revoked, amended or modified; that the undersigned has compared the foregoing copy thereof with the original power of attorney, and that the same is a true and correct copy of the original power of attorney and of the whole thereof;
2. The following are resolutions which were adopted by the Board of Directors of the Corporation by unanimous written consent on the 21st day of July, 2011 and said resolutions have not since been revoked, amended or modified:

"RESOLVED, that each of the individuals named below is authorized to make, execute, seal and deliver for and on behalf of the Corporation any and all bonds, undertakings or obligations in surety or co-surety with others and to execute and deliver for and on behalf of the Corporation renewals, extensions, agreements, waivers, consents or stipulations relating to such aforesaid bonds, undertakings or obligations:

ALFRED N. WRIGHT, RONALD DIGGS

And
RESOLVED FURTHER, that each of the individuals named above is authorized to appoint attorneys-in-fact for the purpose of making, executing, sealing and delivering bonds, undertakings or obligations in surety or co-surety for and on behalf of the Corporation.

3. The undersigned further certifies that the above resolutions are true and correct copies of the resolutions as so recorded and of the whole thereof.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the corporate seal this day of NOV 6 2015, 20

(Corporate Seal) 
Doug Worman, Chief Executive Officer of U.S. Insurance

ENDURANCE AMERICAN INSURANCE COMPANY
Balance Sheet - Statutory - Basis
December 31, 2014

Assets	
Bonds	\$ 300,479,343
Common stocks	90,259,052
Cash	28,823,471
Receivable for securities	7,034,443
Total cash and invested assets	<u>426,594,309</u>
Agents' balances or uncollected premiums	611,326,868
Reinsurance recoverable on loss and loss adjustment expense payments	188,836,591
Funds held by or deposited with reinsurers companies	12,577,282
Current federal and foreign income tax recoverable	222,552
Investment income due and accrued	1,380,223
Receivables from parent, subsidiaries and affiliates	2,916,663
Total admitted assets	\$ <u>1,243,856,448</u>
Liabilities	
Loss and loss adjustment expenses	\$ 204,124,794
Reinsurance payable on paid loss and loss adjustment expenses	330,820,037
Unearned premiums	78,904,134
Ceded reinsurance premiums payable	357,992,680
Provision for reinsurance	1,037,000
Payable to parent, subsidiaries and affiliates	6,497,168
Payable for securities	14,792,578
Other liabilities	8,525,697
Total liabilities	<u>1,082,658,086</u>
Capital and surplus	
Common capital stock	6,000,000
Gross paid in and contributed surplus	531,153,297
Unassigned funds (surplus)	<u>(295,951,935)</u>
Total capital and surplus	<u>241,201,362</u>
Total liabilities and capital and surplus	\$ <u>1,243,856,448</u>

I, Stan Osofsky, Treasurer of Endurance American Insurance Company (the "Company") do hereby certify that to the best of my knowledge and belief, the foregoing is a full and true Statutory Statement of Admitted Assets, Liabilities, Capital and Surplus of the Company as of December 31, 2014 prepared in conformity with accounting practices prescribed or permitted by the State of Delaware Department of Insurance. The foregoing statement should not be taken as a complete statement of financial condition of the Company. Such a statement is available upon request at the Company's office located at 4 Manhattanville Road, 3rd Floor, Purchase, NY 10577.

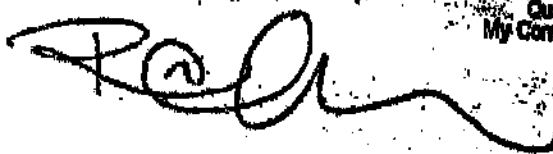
IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of the Company at New York, New York.


 Stan Osofsky, Treasurer

Subscribed and sworn to before me this

12th day of March, 2015

ROSE CHARLES
 Notary Public, State of New York
 No. 02038172844
 Qualified in New York County
 My Commission Expires Aug 13, 2015



Tax ID # _____

APT E-

PIN#: 85015B0170

SCHEDULE B - Part II: M/WBE Participation Plan

Part II to be completed by the bidder/proposer:

Please note: For Non-M/WBE Prime Contractors who will NOT subcontract any services and will self-perform the entire contract, you must obtain a FULL waiver by completing the Waiver Application on pages 9 and 9a and timely submitting it to the contracting agency pursuant to the Notice to Prospective Contractors. Once a FULL WAIVER is granted, it must be included with your bid or proposal and you do not have to complete or submit this form with your bid or proposal.

Section I: Prime Contractor Contact Information

Tax ID #	113091138	FMS Vendor ID #	
Business Name	A. Aleem Construction Inc.	Contact Person	Mervyn Frank
Address	1629 Park Ave, Ste 1B, New York, NY 10029		
Telephone #	(212) 534-5500	Email	Abdulaleem@aaleemconstruction.com

Section II: M/WBE Utilization Goal Calculation: Check the applicable box and complete subsection.

PRIME CONTRACTOR ADOPTING AGENCY M/WBE PARTICIPATION GOALS

<input checked="" type="checkbox"/> For Prime Contractors (including Qualified Joint Ventures and M/WBE firms) adopting Agency M/WBE Participation Goals.	Total Bid/Proposal Value	Agency Total Participation Goals (Line 1, Page 6)	Calculated M/WBE Participation Amount
Calculate the total dollar value of your total bid that you agree will be awarded to M/WBE subcontractors for services and/or credited to an M/WBE prime contractor or Qualified Joint Venture. Please review the Notice to Prospective Contractors for more information on how to obtain credit for M/WBE participation.	\$ 2,934,964	X .14	= \$ 410,854.96 Line 2

PRIME CONTRACTOR OBTAINED PARTIAL WAIVER APPROVAL: ADOPTING MODIFIED M/WBE PARTICIPATION GOALS

<input type="checkbox"/> For Prime Contractors (including Qualified Joint Ventures and M/WBE firms) adopting Modified M/WBE Participation Goals.	Total Bid/Proposal Value	Adjusted Participation Goal (From Partial Waiver)	Calculated M/WBE Participation Amount
Calculate the total dollar value of your total bid that you agree will be awarded to M/WBE subcontractors for services and/or credited to an M/WBE prime contractor or Qualified Joint Venture. Please review the Notice to Prospective Contractors for more information on how to obtain credit for M/WBE participation.	\$	X	= \$ Line 3

Section III: M/WBE Utilization Plan: How Proposer/Bidder Will Fulfill M/WBE Participation Goals. Please review the Notice to Prospective Contractors for more information on how to obtain credit for M/WBE participation. Check applicable box. The Proposer or Bidder will fulfill the M/WBE Participation Goals:

As an M/WBE Prime Contractor that will self-perform and/or subcontract to other M/WBE firms a portion of the contract the value of which is at least the amount located on Lines 2 or 3 above, as applicable. The value of any work subcontracted to non-M/WBE firms will not be credited towards fulfillment of M/WBE Participation Goals. Please check all that apply to Prime Contractor:

MBE WBE

As a Qualified Joint Venture with an M/WBE partner, in which the value of the M/WBE partner's participation and/or the value of any work subcontracted to other M/WBE firms is at least the amount located on Lines 2 or 3 above, as applicable. The value of any work subcontracted to non M/WBE firms will not be credited towards fulfillment of M/WBE Participation Goals.

As a non M/WBE Prime Contractor that will enter into subcontracts with M/WBE firms the value of which is at least the amount located on Lines 2 or 3 above, as applicable.

Section IV: General Contract Information

What is the expected percentage of the total contract dollar value that you expect to award in subcontracts for services, regardless of M/WBE status? % 50


Enter brief description of the type(s) and dollar value of subcontracts for all any services you plan on subcontracting if awarded this contract. For each item, indicate whether the work is designated for participation by MBEs and/or WBEs and the time frame in which such work is scheduled to begin and end. Use additional sheets if necessary.

- 1. Electrical - \$173,000 - MBE
- 2. HVAC - \$1,056,000
- 3. Plumbing, Boiler, Sprinkler - 170,000
- 4. _____
- 5. _____
- 6. _____
- 7. _____
- 8. _____
- 9. _____
- 10. _____
- 11. _____
- 12. _____
- 13. _____
- 14. _____
- 15. _____
- 16. _____
- 17. _____

✓ Scopes of Subcontract Work

Section V: Vendor Certification and Required Affirmations

- I hereby:
- 1) acknowledge my understanding of the M/WBE participation requirements as set forth herein and the pertinent provisions of Section 6-129 of the Administrative Code of the City of New York (Section 6-129), and the rules promulgated thereunder;
 - 2) affirm that the information supplied in support of this M/WBE Utilization Plan is true and correct;
 - 3) agree, if awarded this Contract, to comply with the M/WBE participation requirements of this Contract, the pertinent provisions of Section 6-129, and the rules promulgated thereunder, all of which shall be deemed to be material terms of this Contract
 - 4) agree and affirm that it is a material term of this Contract that the Vendor will award the total dollar value of the M/WBE Participation Goals to certified MBEs and/or WBEs, unless a full waiver is obtained or such goals are modified by the Agency; and
 - 5) agree and affirm, if awarded this Contract, to make all reasonable, good faith efforts to meet the M/WBE Participation Goals, or if a partial waiver is obtained or such goals are modified by the Agency, to meet the modified Participation Goals by soliciting and obtaining the participation of certified MBE and/or WBE firms.

Signature  Date 11/18/2013
 Print Name Mervyn Frank Title President

The City of New York Department of Small Business Services
Division of Labor Services Contract Compliance Unit
110 William Street, New York, New York 10038
Phone: (212) 513 - 6323
Fax: (212) 618-8879

CONSTRUCTION EMPLOYMENT REPORT

GENERAL INFORMATION

1. Your contractual relationship in this contract is: Prime contractor Subcontractor
- 1a. Are M/WBE goals attached to this project? Yes No
2. Please check one of the following if your firm would like information on how to certify with the City of New York as a:
 Minority Owned Business Enterprise
 Women Owned Business Enterprise
 Disadvantaged Business Enterprise
 Locally Based Business Enterprise
 Emerging Business Enterprise
- 2a. If you are certified as an **MBE, WBE, LBE, EBE** or **DBE**, what city/state agency are you certified with? NYC, Port Authority, SCA Are you DBE certified? Yes No
3. Please indicate if you would like assistance from SBS in identifying certified M/WBEs for contracting opportunities: Yes No
4. Is this project subject to a project labor agreement? Yes No
5. Are you a Union contractor? Yes No If yes, please list which local(s) you affiliated with _____
6. Are you a Veteran owned company? Yes No

PART I: CONTRACTOR/SUBCONTRACTOR INFORMATION

7. 113091138 Abdulaleem@aaleemconstruction.com
Employer Identification Number or Federal Tax I.D. Email Address
8. A. Aleem Construction Inc.
Company Name
9. 1629 Park Ave, Ste 1B, New York, NY 10029
Company Address and Zip Code
10. Mervyn Frank (212) 534 5500
Chief Operating Officer Telephone Number
11. Same
Designated Equal Opportunity Compliance Officer Telephone Number
(If same as Item #10, write "same")
12. Same
Name of Prime Contractor and Contact Person
(If same as Item #8, write "same")

13. Number of employees in your company: 9

14. Contract information:

(a) DDC (b) \$2,934,964
Contracting Agency (City Agency) Contract Amount

(c) 8502015PV0018C (d) _____
Procurement Identification Number (PIN) Contract Registration Number (CT#)

(e) TBD (f) TBD
Projected Commencement Date Projected Completion Date

(g) Description and location of proposed contract:

Build an entrance Ramp, Handicap bathroom, new elevator and lift.

15. Has your firm been reviewed by the Division of Labor Services (DLS) within the past 36 months and issued a Certificate of Approval? Yes ___ No X

If yes, attach a copy of certificate.

16. Has DLS within the past month reviewed an Employment Report submission for your company and issued a Conditional Certificate of Approval? Yes ___ No X

If yes, attach a copy of certificate.

NOTE: DLS WILL NOT ISSUE A CONTINUED CERTIFICATE OF APPROVAL IN CONNECTION WITH THIS CONTRACT UNLESS THE REQUIRED CORRECTIVE ACTIONS IN PRIOR CONDITIONAL CERTIFICATES OF APPROVAL HAVE BEEN TAKEN.

17. Has an Employment Report already been submitted for a different contract (not covered by this Employment Report) for which you have not yet received compliance certificate?
Yes ___ No X If yes,

Date submitted: _____
Agency to which submitted: _____
Name of Agency Person: _____
Contract No: _____
Telephone: _____

18. Has your company in the past 36 months been audited by the United States Department of Labor, Office of Federal Contract Compliance Programs (OFCCP)? Yes ___ No X

If yes,

(a) Name and address of OFCCP office.

N/A

(b) Was a Certificate of Equal Employment Compliance issued within the past 36 months?

Yes ___ No N/A

If yes, attach a copy of such certificate.

(c) Were any corrective actions required or agreed to? Yes ___ No N/A

If yes, attach a copy of such requirements or agreements.

(d) Were any deficiencies found? Yes ___ No N/A

If yes, attach a copy of such findings.

19. Is your company or its affiliates a member or members of an employers' trade association which is responsible for negotiating collective bargaining agreements (CBA) which affect construction site hiring? Yes ___ No X

If yes, attach a list of such associations and all applicable CBA's.

PART II: DOCUMENTS REQUIRED

20. For the following policies or practices, attach the relevant documents (e.g., printed booklets, brochures, manuals, memoranda, etc.). If the policy(ies) are unwritten, attach a full explanation of the practices. See instructions.

X (a) Health benefit coverage/description(s) for all management, nonunion and union employees (whether company or union administered)

X (b) Disability, life, other insurance coverage/description

___ (c) Employee Policy/Handbook

___ (d) Personnel Policy/Manual

___ (e) Supervisor's Policy/Manual

___ (f) Pension plan or 401k coverage/description for all management, nonunion and union employees, whether company or union administered

___ (g) Collective bargaining agreement(s).

___ (h) Employment Application(s)

___ (i) Employee evaluation policy/form(s).

___ (j) Does your firm have medical and/or non-medical (i.e. education, military, personal, pregnancy, child care) leave policy?

21. To comply with the Immigration Reform and Control Act of 1986 when and of whom does your firm require the completion of an I-9 Form?

- | | | |
|--|---|--|
| (a) Prior to job offer | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| (b) After a conditional job offer | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |
| (c) After a job offer | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |
| (d) Within the first three days on the job | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| (e) To some applicants | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| (f) To all applicants | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |
| (g) To some employees | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| (h) To all employees | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |

22. Explain where and how completed I-9 Forms, with their supportive documentation, are maintained and made accessible.

At the office

23. Does your firm or any of its collective bargaining agreements require job applicants to take a medical examination? Yes No

If yes, is the medical examination given:

- | | | |
|-----------------------------------|------------------------------|-----------------------------|
| (a) Prior to a job offer | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| (b) After a conditional job offer | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| (c) After a job offer | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| (d) To all applicants | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| (e) Only to some applicants | Yes <input type="checkbox"/> | No <input type="checkbox"/> |

If yes, list for which applicants below and attach copies of all medical examination or questionnaire forms and instructions utilized for these examinations.

24. Do you have a written equal employment opportunity (EEO) policy? Yes No

If yes, list the document(s) and page number(s) where these written policies are located.

25. Does the company have a current affirmative action plan(s) (AAP)

- Minorities and Women
 Individuals with handicaps
 Other. Please specify _____
-

26. Does your firm or collective bargaining agreement(s) have an internal grievance procedure with respect to EEO complaints? Yes No

If yes, please attach a copy of this policy.

If no, attach a report detailing your firm's unwritten procedure for handling EEO complaints.

27. Has any employee, within the past three years, filed a complaint pursuant to an internal grievance procedure or with any official of your firm with respect to equal employment opportunity? Yes ___ No X

If yes, attach an internal complaint log. See instructions.

28. Has your firm, within the past three years, been named as a defendant (or respondent) in any administrative or judicial action where the complainant (plaintiff) alleged violation of any anti-discrimination or affirmative action laws? Yes ___ No X

If yes, attach a log. See instructions.

29. Are there any jobs for which there are physical qualifications? Yes ___ No X

If yes, list the job(s), submit a job description and state the reason(s) for the qualification(s).

30. Are there any jobs for which there are age, race, color, national origin, sex, creed, disability, marital status, sexual orientation, or citizenship qualifications? Yes ___ No X

If yes, list the job(s), submit a job description and state the reason(s) for the qualification(s).

SIGNATURE PAGE

I, (print name of authorized official signing) Mervyn Frank hereby certify that the information submitted herewith is true and complete to the best of my knowledge and belief and submitted with the understanding that compliance with New York City's equal employment requirements, as contained in Chapter 56 of the City Charter, Executive Order No. 50 (1980), as amended, and the implementing Rules and Regulations, is a contractual obligation. I also agree on behalf of the company to submit a certified copy of payroll records to the Division of Labor Services on a monthly basis.

A. Aleem Construction Inc.
Contractor's Name

Mervyn Frank President
Name of person who prepared this Employment Report Title

Mervyn Frank President
Name of official authorized to sign on behalf of the contractor Title

(212) 534-5500
Telephone Number

[Signature] _____
Signature of authorized official Date

If contractors are found to be underutilizing minorities and females in any given trade based on Chapter 56 Section 3H, the Division of Labor Services reserves the right to request the contractor's workforce data and to implement an employment program.

Contractors who fail to comply with the above mentioned requirements or are found to be in noncompliance may be subject to the withholding of final payment.

Willful or fraudulent falsifications of any data or information submitted herewith may result in the termination of the contract between the City and the bidder or contractor and in disapproval of future contracts for a period of up to five years. Further, such falsification may result in civil and/or criminal prosecution.

To the extent permitted by law and consistent with the proper discharge of DLS' responsibilities under Charter Chapter 56 of the City Charter and Executive Order No. 50 (1980) and the implementing Rules and Regulations, all information provided by a contractor to DLS shall be confidential.

Only original signatures accepted.

Sworn to before me this 17 day of 11 2015

[Signature] _____
Notary Public Authorized Signature Date



FORM A. CONTRACT BID INFORMATION: USE OF SUBCONTRACTORS/TRADES

1. Do you plan to subcontract work on this contract? Yes X No
2. If yes, complete the chart below.

NOTE: All proposed subcontractors with a subcontract in excess of \$750,000 must complete an Employment Report for review and approval before the contract may be awarded and work commences.

SUBCONTRACTOR'S NAME*	OWNERSHIP (ENTER APPROPRIATE CODE LETTERS BELOW)	WORK TO BE PERFORMED BY SUBCONTRACTOR	TRADE PROJECTED FOR USE BY SUBCONTRACTOR	PROJECTED DOLLAR VALUE OF SUBCONTRACT
Radiant Plumbing & Heating Corp.	W	Plumbing, Sprinkler, Boiler	Plumbing	\$170,000
Clairmont Electrical Contracting Inc.	B	Electrical	Electrical	\$173,000
Witch Pride Air Conditioning		HVAC	HVAC	\$990,000

*If subcontractor is presently unknown, please enter the trade (craft name).

OWNERSHIP CODES

- W: White
- B: Black
- H: Hispanic
- A: Asian
- N: Native American
- F: Female

FORM B: PROJECTED WORKFORCE

TRADE CLASSIFICATION CODES

- (J) Journeylevel Workers
- (H) Helper
- (TOT) Total by Column
- (A) Apprentice
- (TRN) Trainee

For each trade to be engaged by your company for this project, enter the projected workforce for Males and Females by trade classification on the charts below.

Trade:	MALES						FEMALES														
	(1) White Non Hisp.		(2) Black Non Hisp.		(3) Hisp.		(4) Asian		(5) Native Amer.		(6) White Non Hisp.		(7) Black Non Hisp.		(8) Hisp.		(9) Asian		(10) Native Amer.		
Carpentry				1			1														
Union Affiliation, if applicable																					
N/A																					
Total (Col. #1-10):				1			1														
Total Minority, Male & Female (Col. #2,3,4,5,7,8,9, & 10):				1																	
Total Female (Col. #6 - 10):																					
TOT				2			1														

What are the recruitment sources for you projected hires (i.e., unions, government employment office, job tap center, community outreach)?

In House

FORM C: CURRENT WORKFORCE

TRADE CLASSIFICATION CODES

(J) Journeylevel Workers (A) Apprentice
 (H) Helper (TRN) Trainee
 (TOT) Total by Column

For each trade currently engaged by your company for all work performed in New York City, enter the current workforce for Males and Females by trade classification on the charts below.

Trade: GC	MALES						FEMALES			
	(1) White Non Hisp.	(2) Black Non Hisp.	(3) Hisp.	(4) Asian	(5) Native Amer.	(6) White Non Hisp.	(7) Black Non Hisp.	(8) Hisp.	(9) Asian	(10) Native Amer.
J		2	1							
H		1								
A										
TRN										
TOT		3	1							

Total (Col. #1-10):

Total Minority, Male & Female
 (Col. #2,3,4,5,7,8,9, & 10):

Total Female
 (Col. #6 - 10):

What are the recruitment sources for you projected hires (i.e., unions, government employment office, job tap center, community outreach)?

Advertisement

**BIDDER'S CERTIFICATION OF COMPLIANCE WITH
IRAN DIVESTMENT ACT**

Pursuant to General Municipal Law §103-g, which generally prohibits the City from entering into contracts with persons engaged in investment activities in the energy sector of Iran, the bidder/proposer submits the following certification:


[Please Check One]

BIDDER'S CERTIFICATION

- By submission of this bid or proposal, each bidder/proposer and each person signing on behalf of any bidder/proposer certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief, that each bidder/proposer is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the State Finance Law.

- I am unable to certify that my name and the name of the bidder/proposer does not appear on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the State Finance Law. I have attached a signed statement setting forth in detail why I cannot so certify.

Dated: _____, New York
 _____, 20__



SIGNATURE

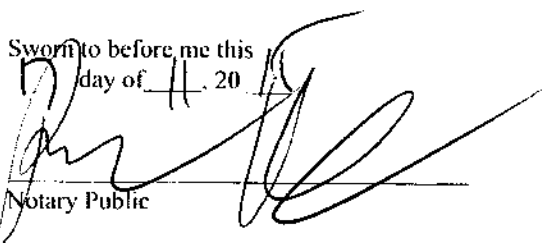
Mervyn Frank

PRINTED NAME

President

TITLE

Sworn to before me this
day of 11, 20__



Notary Public

Dated:



THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

November 9, 2015

ADDENDUM No. # 1

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

PV181HSA2

Harlem School of the Arts, Phase II Building Renovations

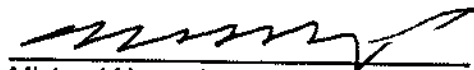
This addendum is issued for the purpose of amending the requirements of the Bid and Contract Documents and is hereby made a part of said Bid and Contract Documents to the same extent as though it were originally included therein.

The bidder is advised that the items listed below apply to the project:

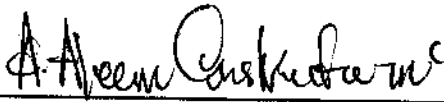
1. **Questions from Bidders and Responses to Questions:**
See Attachment A.
2. **Revisions to the Addendum to the General Conditions:**
See Attachment B.
3. **Revisions to the Drawings:**
See Attachment C.
4. **Revisions to Volume 2 of 3:**
See Attachment D.

THIS ADDENDUM MUST BE SIGNED BY ALL BIDDERS AND ATTACHED TO THEIR BIDS.

If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-3170, (718) 391-1016, or by fax at (718) 391-2615.

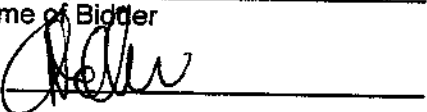


Michael Nastasi
Assistant Commissioner
Cultural/ Parks Programs



Name of Bidder

By:



THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

November 12, 2015

ADDENDUM No. # 2

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

PV181HSA2

Harlem School of the Arts, Phase II Building Renovations

This addendum is issued for the purpose of amending the requirements of the Bid and Contract Documents and is hereby made a part of said Bid and Contract Documents to the same extent as though it were originally included therein.

The bidder is advised that the items listed below apply to the project:


1. **Questions from Bidders and Responses to Questions:**
See Attachment A.

THIS ADDENDUM MUST BE SIGNED BY ALL BIDDERS AND ATTACHED TO THEIR BIDS.

If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-3170, (718) 391-1016, or by fax at (718) 391-2615.



for Michael Mastasi
Assistant Commissioner
Cultural/ Parks Programs

A. ALEEM Construction, Inc
Name of Bidder
By:  _____

THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

November 17, 2015

ADDENDUM No. # 3

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

PV181HSA2

Harlem School of the Arts, Phase II Building Renovations

This addendum is issued for the purpose of amending the requirements of the Bid and Contract Documents and is hereby made a part of said Bid and Contract Documents to the same extent as though it were originally included therein.

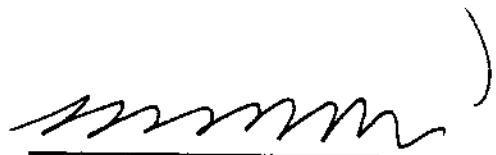
The bidder is advised that the items listed below apply to the project:

1. Questions from Bidders and Responses to Questions:

See Attachment A.

THIS ADDENDUM MUST BE SIGNED BY ALL BIDDERS AND ATTACHED TO THEIR BIDS.

If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-3170, (718) 391-1016, or by fax at (718) 391-2615.



Michael Nastasi
Assistant Commissioner
Cultural/ Parks Programs

A. Home Construction Inc

Name of Bidder

By: [Signature]

**BID BOOKLET
PART A**

SPECIAL NOTICE TO BIDDERS

The New York City Department of Small Business Services (SBS), in conjunction with the New York Business Development Corporation (NYBDC), have established a NYC Construction Loan pilot program to provide prime contractors and subcontractors financing for mobilization costs on certain City construction projects.

Under this initiative, loans are available for early stage mobilization needs such as insurance, labor, supplies and equipment. Bidders are strongly encouraged to visit "Growing Your Business" at www.nyc.gov/nycbusiness to learn more about the loan or contact constructionloan@sbs.nyc.gov / (212) 513-6444 to obtain details and to determine preliminary eligibility.

A successful loan applicant will be required to make an assignment of its contract (or subcontract) payments to the lender NYBDC until the loan is repaid. If the loan is to a subcontractor, a prime contractor must honor the terms of such an assignment.

A prime contractor may not discriminate against a subcontractor or potential subcontractor by reason of the subcontractor's participation, or nonparticipation, in the NYC Construction Loan program.

PROJECT ID: PV181HSA2

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

BID BOOKLET

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**CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS**

SPECIAL NOTICE TO BIDDERS

BID SUBMISSION REQUIREMENTS

THE BID SHALL CONSIST OF TWO (2) SEPARATE, SEALED ENVELOPES. THE DOCUMENTS THAT MUST BE COMPLETED AND INCLUDED IN EACH SEPARATE ENVELOPE ARE LISTED BELOW.

BID ENVELOPE #1: Bid Envelope #1 shall contain the following items:

- Bid Form, including Affirmation
- Bid Security (if required, see page 24)
- Schedule B: M/WBE Utilization Plan (if participation goals have been established)

BID ENVELOPE #2: Bid Envelope #2 shall contain **ONLY** the following item:

- Bidder's Identification of Subcontractors (see pages 18 & 19)

**FAILURE TO SUBMIT THE FOUR ITEMS LISTED ABOVE
WILL RESULT IN THE DISQUALIFICATION OF THE BID**

BID ENVELOPE #1: In addition to the items listed above, Bid Envelope #1 shall also contain the following items: **DO NOT** Include the items listed below in Bid Envelope #2.

- Bid Breakdown (if required, see page 23)
- Safety Questionnaire
- Construction Employment Report (if bid is \$1,000,000 or more)
- Contract Certificate (if bid is less than \$1,000,000)
- Confirmation of Vendex Compliance
- Bidder's Certification of Compliance with Iran Divestment Act
- Special Experience Requirements Qualification Form (if required, see pages 3, 4)
- Apprenticeship Program Requirements (if required, see pages 10, 11)
- Any Addenda issued prior to the receipt of bids

**FAILURE TO SUBMIT THE NINE ITEMS LISTED ABOVE
MAY RESULT IN THE DISQUALIFICATION OF THE BID.**

- NOTES:**
- (1) All of the above referred to blank forms to be completed and submitted with the bid are included in the BID BOOKLET.
 - (2) If the bidder has any questions or requires additional information, please contact the Department of Design and Construction by phone (718-391-2601) or by fax (718-391-2615).
 - (3) **VENDEX QUESTIONNAIRES:** Vendex Questionnaires, as well as detailed instructions, may be obtained at www.nyc.gov/vendex. The bidder may also obtain Vendex forms and instructions by contacting the Agency Chief Contracting Officer or the contact person for this contract.
 - (4) **SPECIAL EXPERIENCE REQUIREMENTS:** The Bidder is advised that Special Experience Requirements may apply to this contract. Such requirements are set forth on pages 3 and 4 of this Bid Booklet.
 - (5) **SPECIAL EXPERIENCE REQUIREMENTS FOR ASBESTOS:** The Bidder is advised that this contract contains strict requirements regarding the prior experience and licensing of the subcontractor who will perform any required asbestos abatement work. These special experience requirements are set forth in the section of the specifications which describes any required asbestos abatement work.

SPECIAL EXPERIENCE REQUIREMENTS

Bidders are advised that the special experience requirements set forth below apply to the General Construction Contractor if a check mark is indicated before the word "Yes". Compliance with these special experience requirements will be determined solely by the City. Failure to meet these special experience requirements will result in the rejection of the bid as non-responsive.

General Construction Contractor X YES _____ NO

- (A) **EXPERIENCE REQUIREMENTS FOR THE BIDDER (PRIME CONTRACTOR):** The special experience requirements set forth below apply to the bidder. Compliance with such special experience requirements will be evaluated at the time of the bid.
- 1) The bidder must, with the last five (5) consecutive years prior to the bid opening, have successfully completed in a timely fashion at least three (3) projects similar in scope and type to the required work.
- (B) **QUALIFICATION FORM:** For each project submitted to meet the experience requirements set forth above, the bidder must complete and submit with its bid the Qualification Form set forth in this Bid Booklet. All information on the Qualification Form must be provided.
- (C) **CONDITIONS:** The City may, in determining compliance with the special experience requirements set forth above, consider prior projects completed by principal(s) or other employees of the bidder while affiliated with another entity, subject to the conditions set forth below.
- 1) Any principal or other employee on whose prior experience the bidder is relying to demonstrate compliance with this special experience requirement must have held the following: (a) a significant management role in the prior entity with which he/she was affiliated, and (b) a significant management role in the entity submitting the bid for a period of six months or from the inception of the bidding entity.
 - 2) The bidder may not rely on the experience of its principals or other employees to demonstrate compliance with any other requirements, including without limitation, financial requirements or requirements for a specified minimum amount of annual gross revenues.
- (D) **JOINT VENTURES:** In the event the bidder is a joint venture, at least one firm in the joint venture must meet the above described experience requirements.
- (E) **COMPLIANCE:** Compliance with the experience requirements set forth herein will be determined solely by the City. The bidder is advised that failure to meet the above described experience will result in the rejection of the bid as non-responsive.

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Qualification Form

Project ID: PV181HSA2

List previous projects completed to meet the special experience requirements for this contract. Please photocopy this form for submission of all required projects.

Name of Contractor: _____

Name of Project: _____

Location of Project: _____

Owner or Owner's representative (Architect or Engineer) who is familiar with the work performed:

Name: _____

Title: _____ Phone Number: _____

Brief description of work completed: _____

Was the work performed as a prime or a subcontractor: _____

Amount of Contract: _____

Date of Completion: _____

Name of Contractor: _____

Name of Project: _____

Location of Project: _____

Owner or Owner's representative (Architect or Engineer) who is familiar with the work performed:

Name: _____

Title: _____ Phone Number: _____

Brief description of work completed: _____

Was the work performed as a prime or a subcontractor: _____

Amount of Contract: _____

Date of Completion: _____

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MWBE PROGRAM

M/WBE UTILIZATION PLAN

M/WBE Program Requirements: The requirements for the M/WBE Program are set forth on the following pages of this Bid Booklet, in the section entitled "Notice to All Prospective Contractors".

Schedule B: M/WBE Utilization Plan: Schedule B: M/WBE Utilization Plan for this Contract is set forth in this Bid Booklet on the pages following the section entitled "Notice to All Prospective Contractors". The M/WBE Utilization Plan (Part I) indicates whether Participation Goals have been established for this Contract. If Participation Goals have been established for this Contract, the bidder must submit an M/WBE Utilization Plan (Part II) with its bid.

Waiver: The bidder may seek a full or partial pre-award waiver of the Participation Goals in accordance with the "Notice to All Prospective Contractors" (See Part A, Section 10). The bidder's request for a waiver must be submitted at least seven (7) calendar days prior to the bid date. Waiver requests submitted after the deadline will not be considered. The form for requesting a waiver of the Participation Goals is set forth in the M/WBE Utilization Plan (Part III).

Rejection of the Bid: The bidder must complete Schedule B: M/WBE Utilization Plan (Part II) set forth in this Bid Booklet on the pages following the section entitled "Notice to All Prospective Contractors". A Schedule B submitted by the bidder which does not include the Vendor Certification and Required Affirmations (See Section V of Part II) will be deemed to be non-responsive, unless a full waiver of the Participation Goals is granted (Schedule B, Part III). In the event that the City determines that the bidder has submitted a Schedule B where the Vendor Certification and Required Affirmations are completed but other aspects of the Schedule B are not complete, or contain a copy or computation error that is at odds with the Vendor Certification and Required Affirmations, the bidder will be notified by the Agency and will be given four (4) calendar days from receipt of notification to cure the specified deficiencies and return a completed Schedule B to the Agency. Failure to do so will result in a determination that the Bid is non-responsive.

Receipt of notification is defined as the date notice is emailed or faxed (if the bidder has provided an email address or fax number), or no later than five (5) days from the date of mailing or upon delivery, if delivered.

Impact on LBE Requirements: If Participation Goals have been established for the participation of M/WBEs, the contractor is not required to comply with the Locally Based Enterprise Program ("LBE"). The LBE Program is set forth in Article 67 of the Contract.

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NOTICE TO ALL PROSPECTIVE CONTRACTORS

PARTICIPATION BY MINORITY-OWNED AND WOMEN-OWNED BUSINESS
ENTERPRISES IN CITY PROCUREMENT

ARTICLE I. M/WBE PROGRAM

Local Law No. 129 of 2005 added and Local Law 1 of 2013 amended Section 6-129 of the Administrative Code of the City of New York (hereinafter "Section 6-129"). Section 6-129 establishes the program for participation in City procurement ("M/WBE Program") by minority-owned business enterprises ("MBEs") and women-owned business enterprises ("WBEs"), certified in accordance with Section 1304 of the New York City Charter. As stated in Section 6-129, the intent of the program is to address the impact of discrimination on the City's procurement process, and to promote the public interest in avoiding fraud and favoritism in the procurement process, increasing competition for City business, and lowering contract costs. The contract provisions contained herein are pursuant to Section 6-129, and the rules of the Department of Small Business Services ("DSBS") promulgated thereunder.

If this Contract is subject to the M/WBE Program established by Section 6-129, the specific requirements of MBE and/or WBE participation for this Contract are set forth in Schedule B of the Contract (entitled the "M/WBE Utilization Plan"), and are detailed below. The Contractor must comply with all applicable MBE and WBE requirements for this Contract.

All provisions of Section 6-129 are hereby incorporated in the Contract by reference and all terms used herein that are not defined herein shall have the meanings given such terms in Section 6-129. Article I, Part A, below, sets forth provisions related to the participation goals for construction, standard and professional services contracts. Article I, Part B, below, sets forth miscellaneous provisions related to the M/WBE Program.

PART A

PARTICIPATION GOALS FOR CONSTRUCTION, STANDARD
AND PROFESSIONAL SERVICES CONTRACTS OR TASK ORDERS

1. The **MBE and/or WBE Participation Goals** established for this Contract or Task Orders issued pursuant to this Contract, ("Participation Goals"), as applicable, are set forth on Schedule B, Part 1 to this Contract (see Page 1, line 1 Total Participation Goals) or will be set forth on Schedule B, Part 1 to Task Orders issued pursuant to this Contract, as applicable.

The **Participation Goals** represent a percentage of the total dollar value of the Contract or Task Order, as applicable, that may be achieved by awarding subcontracts to firms certified with New York City Department of Small Business Services as MBEs and/or WBEs, and/or by crediting the participation of prime contractors and/or qualified joint ventures as provided in Section 3 below, unless the goals have been waived or modified by Agency in accordance with Section 6-129 and Part A, Sections 10 and 11 below, respectively.

2. If **Participation Goals** have been established for this Contract or Task Orders issued pursuant to this Contract, Contractor agrees or shall agree as a material term of the Contract that Contractor shall be subject to the **Participation Goals**, unless the goals are waived or modified by Agency in accordance with Section 6-129 and Part A, Sections 10 and 11 below, respectively.

3. If **Participation Goals** have been established for this Contract or Task Order issued pursuant to this Contract, a Contractor that is an MBE and/or WBE shall be permitted to count its own participation toward fulfillment of the relevant **Participation Goal**, provided that in accordance with Section 6-129 the value of Contractor's participation shall be determined by subtracting from the total value of the Contract or Task Order, as applicable, any amounts that the Contractor pays to direct subcontractors (as defined in Section 6-129(c)(13)), and provided further that a Contractor that is certified as both an MBE and a WBE may count its own participation either toward the goal for MBEs or the goal for WBEs, but not both.

A Contractor that is a qualified joint venture (as defined in Section 6-129(c)(30)) shall be permitted to count a percentage of its own participation toward fulfillment of the relevant **Participation Goal**. In accordance with Section 6-129, the value of Contractor's participation shall be determined by subtracting from the total value of the Contract or Task Order, as applicable, any amounts that Contractor pays to direct subcontractors, and then multiplying the remainder by the percentage to be applied to total profit to

determine the amount to which an MBE or WBE is entitled pursuant to the joint venture agreement, provided that where a participant in a joint venture is certified as both an MBE and a WBE, such amount shall be counted either toward the goal for MBEs or the goal for WBEs, but not both.

4. A. If **Participation Goals** have been established for this Contract, a prospective contractor shall be required to submit with its bid or proposal, as applicable, a completed Schedule B, M/WBE Utilization Plan, Part II (see Pages 2-4) indicating: (a) whether the contractor is an MBE or WBE, or qualified joint venture; (b) the percentage of work it intends to award to direct subcontractors; and (c) in cases where the contractor intends to award direct subcontracts, a description of the type and dollar value of work designated for participation by MBEs and/or WBEs, and the time frames in which such work is scheduled to begin and end. In the event that this M/WBE Utilization Plan indicates that the bidder or proposer, as applicable, does not intend to meet the **Participation Goals**, the bid or proposal, as applicable, shall be deemed non-responsive, unless Agency has granted the bidder or proposer, as applicable, a pre-award waiver of the Participation Goals in accordance with Section 6-129 and Part A, Section 10 below.

B. (i) If this Contract is for a master services agreement or other requirements type contract that will result in the issuance of Task Orders that will be individually registered ("Master Services Agreement") and is subject to M/WBE **Participation Goals**, a prospective contractor shall be required to submit with its bid or proposal, as applicable, a completed Schedule B, M/WBE Participation Requirements for Master Services Agreements That Will Require Individually Registered Task Orders, Part II (page 2) indicating the prospective contractor's certification and required affirmations to make all reasonable good faith efforts to meet participation goals established on each individual Task Order issued pursuant to this Contract, or if a partial waiver is obtained or such goals are modified by the Agency, to meet the modified **Participation Goals** by soliciting and obtaining the participation of certified MBE and/or WBE firms. In the event that the Schedule B indicates that the bidder or proposer, as applicable, does not intend to meet the **Participation Goals** that may be established on Task Orders issued pursuant to this Contract, the bid or proposal, as applicable, shall be deemed non-responsive.

(ii) **Participation Goals** on a Master Services Agreement will be established for individual Task Orders issued after the Master Services Agreement is awarded. If **Participation Goals** have been established on a Task Order, a contractor shall be required to submit a Schedule B – M/WBE Utilization Plan For Independently Registered Task Orders That Are Issued Pursuant to Master Services Agreements, Part II (see Pages 2-4) indicating: (a) whether the contractor is an MBE or WBE, or qualified joint venture; (b) the percentage of work it intends to award to direct subcontractors; and (c) in cases where the contractor intends to award direct subcontracts, a description of the type and dollar value of work designated for participation by MBEs and/or WBEs, and the time frames in which such work is scheduled to begin and end. The contractor must engage in good faith efforts to meet the **Participation Goals** as established for the Task Order unless Agency has granted the contractor a pre-award waiver of the Participation Goals in accordance with Section 6-129 and Part A, Section 10 below.

C. THE BIDDER/PROPOSER MUST COMPLETE THE SCHEDULE B INCLUDED HEREIN (SCHEDULE B, PART II). A SCHEDULE B SUBMITTED BY THE BIDDER/PROPOSER WHICH DOES NOT INCLUDE THE VENDOR CERTIFICATION AND REQUIRED AFFIRMATIONS (SEE SECTION V OF PART II) WILL BE DEEMED TO BE NON-RESPONSIVE, UNLESS A FULL WAIVER OF THE PARTICIPATION GOALS IS GRANTED (SCHEDULE B, PART III). IN THE EVENT THAT THE CITY DETERMINES THAT THE BIDDER/PROPOSER HAS SUBMITTED A SCHEDULE B WHERE THE VENDOR CERTIFICATION AND REQUIRED AFFIRMATIONS ARE COMPLETED BUT OTHER ASPECTS OF THE SCHEDULE B ARE NOT COMPLETE, OR CONTAIN A COPY OR COMPUTATION ERROR THAT IS AT ODDS WITH THE VENDOR CERTIFICATION AND AFFIRMATIONS, THE BIDDER/PROPOSER WILL BE NOTIFIED BY THE AGENCY AND WILL BE GIVEN FOUR (4) CALENDAR DAYS FROM RECEIPT OF NOTIFICATION TO CURE THE SPECIFIED DEFICIENCIES AND RETURN A COMPLETED SCHEDULE B TO THE AGENCY. FAILURE TO DO SO WILL RESULT IN A DETERMINATION THAT THE BID/PROPOSAL IS NON-RESPONSIVE. RECEIPT OF NOTIFICATION IS DEFINED AS THE DATE NOTICE IS E-MAILED OR FAXED (IF THE BIDDER/PROPOSER HAS PROVIDED AN E-MAIL ADDRESS OR FAX NUMBER), OR NO LATER THAN FIVE (5) CALENDAR DAYS FROM THE DATE OF MAILING OR UPON DELIVERY, IF DELIVERED.

5. Where an M/WBE Utilization Plan has been submitted, the Contractor shall, within 30 days of issuance by Agency of a notice to proceed, submit a list of proposed persons or entities to which it intends to award subcontracts within the subsequent 12 months. In the case of multi-year contracts, such list shall also be submitted every year thereafter. The Agency may also require the Contractor to report periodically about the contracts awarded by its direct subcontractors to indirect subcontractors (as defined in Section 6-129(c)(22)). **PLEASE NOTE: If this Contract is a public works project subject to GML §101(5) (i.e., a contract valued at or**

below \$3M for projects in New York City) or if the Contract is subject to a project labor agreement in accordance with Labor Law §222, and the bidder is required to identify at the time of bid submission its intended subcontractors for the Wicks trades (plumbing and gas fitting; steam heating, hot water heating, ventilating and air conditioning (HVAC); and electric wiring), the Contractor must identify all those to which it intends to award construction subcontracts for any portion of the Wicks trade work at the time of bid submission, regardless of what point in the life of the contract such subcontracts will occur. In identifying intended subcontractors in the bid submission, bidders may satisfy any Participation Goals established for this Contract by proposing one or more subcontractors that are MBEs and/or WBEs for any portion of the Wicks trade work. In the event that the Contractor's selection of a subcontractor is disapproved, the Contractor shall have a reasonable time to propose alternate subcontractors.

6. MBE and WBE firms must be certified by DSBS in order for the Contractor to credit such firms' participation toward the attainment of the **Participation Goals**. Such certification must occur prior to the firms' commencement of work. A list of MBE and WBE firms may be obtained from the DSBS website at www.nyc.gov/buycertified, by emailing DSBS at buyer@sbs.nyc.gov, by calling (212) 513-6356, or by visiting or writing DSBS at 110 William St., New York, New York, 10038, 7th floor. Eligible firms that have not yet been certified may contact DSBS in order to seek certification by visiting www.nyc.gov/getcertified, emailing MWBE@sbs.nyc.gov, or calling the DSBS certification helpline at (212) 513-6311. A firm that is certified as both an MBE and a WBE may be counted either toward the goal for MBEs or the goal for WBEs, but not both. No credit shall be given for participation by a graduate MBE or graduate WBE, as defined in Section 6-129(c)(20).

7. Where an **M/WBE Utilization Plan** has been submitted, the Contractor shall, with each voucher for payment, and/or periodically as Agency may require, submit statements, certified under penalty of perjury, which shall include, but not be limited to, the total amount the Contractor paid to its direct subcontractors, and, where applicable pursuant to Section 6-129(j), the total amount direct subcontractors paid to indirect subcontractors; the names, addresses and contact numbers of each MBE or WBE hired as a subcontractor by the Contractor, and, where applicable, hired by any of the Contractor's direct subcontractors; and the dates and amounts paid to each MBE or WBE. The Contractor shall also submit, along with its voucher for final payment: the total amount it paid to subcontractors, and, where applicable pursuant to Section 6-129(j), the total amount its direct subcontractors paid directly to their indirect subcontractors; and a final list, certified under penalty of perjury, which shall include the name, address and contact information of each subcontractor that is an MBE or WBE, the work performed by, and the dates and amounts paid to each.

8. If payments made to, or work performed by, MBEs or WBEs are less than the amount specified in the Contractor's **M/WBE Utilization Plan**, Agency shall take appropriate action, in accordance with Section 6-129 and Article II below, unless the Contractor has obtained a modification of its **M/WBE Utilization Plan** in accordance with Section 6-129 and Part A, Section 11 below.

9. Where an **M/WBE Utilization Plan** has been submitted, and the Contractor requests a change order the value of which exceeds the greater of 10 percent of the Contract or Task Order, as applicable, or \$500,000, Agency shall review the scope of work for the Contract or Task Order, as applicable, and the scale and types of work involved in the change order, and determine whether the **Participation Goals** should be modified.

10. Pre-award waiver of the **Participation Goals**. (a) A bidder or proposer, or contractor with respect to a Task Order, may seek a pre-award full or partial waiver of the **Participation Goals** in accordance with Section 6-129, which requests that Agency change one or more **Participation Goals** on the grounds that the **Participation Goals** are unreasonable in light of the availability of certified firms to perform the services required, or by demonstrating that it has legitimate business reasons for proposing a lower level of subcontracting in its **M/WBE Utilization Plan**.

(b) To apply for a full or partial waiver of the **Participation Goals**, a bidder, proposer, or contractor, as applicable, must complete Part III (Page 5) of Schedule B and submit such request no later than seven (7) calendar days prior to the date and time the bids, proposals, or Task Orders are due, in writing to the Agency by email at zhangji@ddc.nyc.gov or via facsimile at (718) 391-1886. Bidders, proposers, or contractors, as applicable, who have submitted requests will receive an Agency response by no later than two (2) calendar days prior to the due date for bids, proposals, or Task Orders; provided, however, that if that date would fall on a weekend or holiday, an Agency response will be provided by close-of-business on the business day before such weekend or holiday date.

(c) If the Agency determines that the **Participation Goals** are unreasonable in light of the availability of certified firms to perform the services required, it shall revise the solicitation and extend the deadline for bids and proposals, or revise the Task Order, as applicable.

(d) Agency may grant a full or partial waiver of the Participation Goals to a bidder, proposer or contractor, as applicable, who demonstrates—before submission of the bid, proposal or Task Order, as applicable—that it has legitimate business reasons for proposing the level of subcontracting in its M/WBE Utilization Plan. In making its determination, Agency shall consider factors that shall include, but not be limited to, whether the bidder, proposer or contractor, as applicable, has the capacity and the bona fide intention to perform the Contract without any subcontracting, or to perform the Contract without awarding the amount of subcontracts represented by the Participation Goals. In making such determination, Agency may consider whether the M/WBE Utilization Plan is consistent with past subcontracting practices of the bidder, proposer or contractor, as applicable, whether the bidder, proposer or contractor, as applicable, has made efforts to form a joint venture with a certified firm, and whether the bidder, proposer, or contractor, as applicable, has made good faith efforts to identify other portions of the Contract that it intends to subcontract.

11. Modification of M/WBE Utilization Plan. (a) A Contractor may request a modification of its M/WBE Utilization Plan after award of this Contract. PLEASE NOTE: If this Contract is a public works project subject to GML §101(5) (i.e., a contract valued at or below \$3M for projects in New York City) or if the Contract is subject to a project labor agreement in accordance with Labor Law §222, and the bidder is required to identify at the time of bid submission its intended subcontractors for the Wicks trades (plumbing and gas fitting; steam heating, hot water heating, ventilating and air conditioning (HVAC); and electric wiring), the Contractor may request a Modification of its M/WBE Utilization Plan as part of its bid submission. The Agency may grant a request for Modification of a Contractor's M/WBE Utilization Plan if it determines that the Contractor has established, with appropriate documentary and other evidence, that it made reasonable, good faith efforts to meet the Participation Goals. In making such determination, Agency shall consider evidence of the following efforts, as applicable, along with any other relevant factors:

- (i) The Contractor advertised opportunities to participate in the Contract, where appropriate, in general circulation media, trade and professional association publications and small business media, and publications of minority and women's business organizations;
- (ii) The Contractor provided notice of specific opportunities to participate in the Contract, in a timely manner, to minority and women's business organizations;
- (iii) The Contractor sent written notices, by certified mail or facsimile, in a timely manner, to advise MBEs or WBEs that their interest in the Contract was solicited;
- (iv) The Contractor made efforts to identify portions of the work that could be substituted for portions originally designated for participation by MBEs and/or WBEs in the M/WBE Utilization Plan, and for which the Contractor claims an inability to retain MBEs or WBEs;
- (v) The Contractor held meetings with MBEs and/or WBEs prior to the date their bids or proposals were due, for the purpose of explaining in detail the scope and requirements of the work for which their bids or proposals were solicited;
- (vi) The Contractor made efforts to negotiate with MBEs and/or WBEs as relevant to perform specific subcontracts, or act as suppliers or service providers;
- (vii) Timely written requests for assistance made by the Contractor to Agency's M/WBE liaison officer and to DSBS;
- (viii) Description of how recommendations made by DSBS and Agency were acted upon and an explanation of why action upon such recommendations did not lead to the desired level of participation of MBEs and/or WBEs.

Agency's M/WBE officer shall provide written notice to the Contractor of the determination.

(b) The Agency may modify the **Participation Goals** when the scope of the work has been changed by the Agency in a manner that affects the scale and types of work that the Contractor indicated in its M/WBE Utilization Plan would be awarded to subcontractors.

12. If this Contract is for an indefinite quantity of construction, standard or professional services or is a requirements type contract and the Contractor has submitted an M/WBE Utilization Plan and has committed to subcontract work to MBEs and/or WBEs in order to meet the **Participation Goals**, the Contractor will not be deemed in violation of the M/WBE Program requirements for this Contract with regard to any work which was intended to be subcontracted to an MBE and/or WBE to the extent that the Agency has determined that such work is not needed.

13. If **Participation Goals** have been established for this Contract or a Task Order issued pursuant to this Contract, at least once annually during the term of the Contract or Task Order, as applicable, Agency shall review the Contractor's progress toward attainment of its M/WBE Utilization Plan, including but not limited to, by reviewing the percentage of work the Contractor has actually awarded to MBE and/or WBE subcontractors and the payments the Contractor made to such subcontractors.

14. If **Participation Goals** have been established for this Contract or a Task Order issued pursuant to this Contract, Agency shall evaluate and assess the Contractor's performance in meeting those goals, and such evaluation and assessment shall become part of the Contractor's overall contract performance evaluation.

PART B: MISCELLANEOUS

1. The Contractor shall take notice that, if this solicitation requires the establishment of an **M/WBE Utilization Plan**, the resulting contract may be audited by DSBS to determine compliance with Section 6-129. See §6-129(e)(10). Furthermore, such resulting contract may also be examined by the City's Comptroller to assess compliance with the **M/WBE Utilization Plan**.
2. Pursuant to DSBS rules, construction contracts that include a requirement for an **M/WBE Utilization Plan** shall not be subject to the law governing Locally Based Enterprises set forth in Section 6-108.1 of the Administrative Code of the City of New York.
3. DSBS is available to assist contractors and potential contractors in determining the availability of MBEs and/or WBEs to participate as subcontractors, and in identifying opportunities that are appropriate for participation by MBEs and/or WBEs in contracts.
4. Prospective contractors are encouraged to enter into qualified joint venture agreements with MBEs and/or WBEs as defined by Section 6-129(c)(30).
5. By submitting a bid or proposal the Contractor hereby acknowledges its understanding of the **M/WBE Program** requirements set forth herein and the pertinent provisions of Section 6-129, and any rules promulgated thereunder, and if awarded this Contract, the Contractor hereby agrees to comply with the **M/WBE Program** requirements of this Contract and pertinent provisions of Section 6-129, and any rules promulgated thereunder, all of which shall be deemed to be material terms of this Contract. The Contractor hereby agrees to make all reasonable, good faith efforts to solicit and obtain the participation of MBEs and/or WBEs to meet the required **Participation Goals**.

ARTICLE II. ENFORCEMENT

1. If Agency determines that a bidder or proposer, as applicable, has, in relation to this procurement, violated Section 6-129 or the DSBS rules promulgated pursuant to Section 6-129, Agency may disqualify such bidder or proposer, as applicable, from competing for this Contract and the Agency may revoke such bidder's or proposer's prequalification status, if applicable.
2. Whenever Agency believes that the Contractor or a subcontractor is not in compliance with Section 6-129 or the DSBS rules promulgated pursuant to Section 6-129, or any provision of this Contract that implements Section 6-129, including, but not limited to any **M/WBE Utilization Plan**, Agency shall send a written notice to the Contractor describing the alleged noncompliance and offering the Contractor an opportunity to be heard. Agency shall then conduct an investigation to determine whether such Contractor or subcontractor is in compliance.
3. In the event that the Contractor has been found to have violated Section 6-129, the DSBS rules promulgated pursuant to Section 6-129, or any provision of this Contract that implements Section 6-129, including, but not limited to, any **M/WBE Utilization Plan**, Agency may determine that one of the following actions should be taken:
 - (a) entering into an agreement with the Contractor allowing the Contractor to cure the violation;
 - (b) revoking the Contractor's pre-qualification to bid or make proposals for future contracts;
 - (c) making a finding that the Contractor is in default of the Contract;
 - (d) terminating the Contract;
 - (e) declaring the Contractor to be in breach of Contract;
 - (f) withholding payment or reimbursement;
 - (g) determining not to renew the Contract;assessing actual and consequential damages;

- (i) assessing liquidated damages or reducing fees, provided that liquidated damages may be based on amounts representing costs of delays in carrying out the purposes of the M/WBE Program, or in meeting the purposes of the Contract, the costs of meeting utilization goals through additional procurements, the administrative costs of investigation and enforcement, or other factors set forth in the Contract;
- (j) exercising rights under the Contract to procure goods, services or construction from another contractor and charge the cost of such contract to the Contractor that has been found to be in noncompliance; or
- (k) taking any other appropriate remedy.

4. If an M/WBE Utilization Plan has been submitted, and pursuant to this Article II, Section 3, the Contractor has been found to have failed to fulfill its **Participation Goals** contained in its M/WBE Utilization Plan or the **Participation Goals** as modified by Agency pursuant to Article I, Part A, Section 11, Agency may assess liquidated damages in the amount of ten percent (10%) of the difference between the dollar amount of work required to be awarded to MBE and/or WBE firms to meet the **Participation Goals** and the dollar amount the Contractor actually awarded and paid, and/or credited, to MBE and/or WBE firms. In view of the difficulty of accurately ascertaining the loss which the City will suffer by reason of Contractor's failure to meet the **Participation Goals**, the foregoing amount is hereby fixed and agreed as the liquidated damages that the City will suffer by reason of such failure, and not as a penalty. Agency may deduct and retain out of any monies which may become due under this Contract the amount of any such liquidated damages; and in case the amount which may become due under this Contract shall be less than the amount of liquidated damages suffered by the City, the Contractor shall be liable to pay the difference.

5. Whenever Agency has reason to believe that an MBE and/or WBE is not qualified for certification, or is participating in a contract in a manner that does not serve a commercially useful function (as defined in Section 6-129(c)(8)), or has violated any provision of Section 6-129, Agency shall notify the Commissioner of DSBS who shall determine whether the certification of such business enterprise should be revoked.

6. Statements made in any instrument submitted to Agency pursuant to Section 6-129 shall be submitted under penalty of perjury and any false or misleading statement or omission shall be grounds for the application of any applicable criminal and/or civil penalties for perjury. The making of a false or fraudulent statement by an MBE and/or WBE in any instrument submitted pursuant to Section 6-129 shall, in addition, be grounds for revocation of its certification.

7. The Contractor's record in implementing its M/WBE Utilization Plan shall be a factor in the evaluation of its performance. Whenever Agency determines that a Contractor's compliance with an M/WBE Utilization Plan has been unsatisfactory, Agency shall, after consultation with the City Chief Procurement Officer, file an advice of caution form for inclusion in VENDEX as caution data.

Tax ID #: _____

APT E-
PIN#: 85015B0170

Contract # 1 - General Construction Work

SCHEDULE B - M/WBE Utilization Plan

Part I: M/WBE Participation Goals

Part I to be completed by contracting agency

Contract Overview

APT E-Pin #	<u>85015B0170</u>	FMS Project ID#:	<u>PV181HSA2</u>
Project Title/Agency	<u>Harlem School of Arts, Phase II Building Renovations</u>		
PIN #	<u>8502015PV0018C</u>		
Bid/Proposal	_____		
Response Date:	<u>November 18, 2015</u>		
Contracting Agency	<u>Department of Design and Construction</u>		
Agency Address	<u>30-30 Thomson Avenue</u>	City	<u>Long Island City</u> State <u>NY</u> Zip Code <u>11101</u>
Contact Person	<u>Norma Negrón</u>	Title	<u>MWBE Liaison & Compliance Analyst</u>
Telephone #	<u>(718) 391-1502</u>	Email	<u>negronn@ddc.nyc.gov</u>

Project Description (attach additional pages if necessary)

This Project consists of upgrade of the existing facility which will include the rehabilitation of the main entrance to achieve barrier free accessibility, creation of a barrier free restroom on the second floor, installation of a new elevator to serve the first, second, and third floors, replacing the boiler and hot water systems, new central air-conditioning units, modification of existing air- distribution system, and provide additional electrical outlets in the "G Space" to be used for portable sound and lighting devices.

M/WBE Participation Goals for Services

Enter the percentage amount for each group or for an unspecified goal. Please note that there are no goals for Asian Americans in Professional Services

Prime Contract Industry: Construction

Group	Percentage
<u>Unspecified *</u>	<u>14 %</u>
or	
Black American	<u>UNSPECIFIED %</u>
Hispanic American	<u>UNSPECIFIED %</u>
Asian American	<u>UNSPECIFIED %</u>
Women	<u>UNSPECIFIED %</u>
Total Participation Goals	14 %

Line 1

* Note: For this procurement, individual ethnicity and gender goals are not specified. The Total Participation Goals for construction contracts may be met by using Black American, Hispanic American, Asian American or Women certified firms or any combination of such firms.

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Tax ID #: _____

APT E-

PIN#: 85015B0170

SCHEDULE B - Part II: M/WBE Participation Plan

Part II to be completed by the bidder/proposer:

Please note: For Non-M/WBE Prime Contractors who will NOT subcontract any services and will self-perform the entire contract, you must obtain a FULL waiver by completing the Waiver Application on pages 9 and 9a and timely submitting it to the contracting agency pursuant to the Notice to Prospective Contractors. Once a FULL WAIVER is granted, it must be included with your bid or proposal and you do not have to complete or submit this form with your bid or proposal.

Section I: Prime Contractor Contact Information

Tax ID # _____	FMS Vendor ID # _____
Business Name _____	Contact Person _____
Address _____	
Telephone # _____	Email _____

Section II: M/WBE Utilization Goal Calculation: Check the applicable box and complete subsection.

PRIME CONTRACTOR ADOPTING AGENCY M/WBE PARTICIPATION GOALS

<input type="checkbox"/> For Prime Contractors (including Qualified Joint Ventures and M/WBE firms) adopting Agency M/WBE Participation Goals. Calculate the total dollar value of your total bid that you agree will be awarded to M/WBE subcontractors for services and/or credited to an M/WBE prime contractor or Qualified Joint Venture. Please review the Notice to Prospective Contractors for more information on how to obtain credit for M/WBE participation.	Total Bid/Proposal Value	Agency Total Participation Goals (Line 1, Page 6)		Calculated M/WBE Participation Amount
	\$ _____	X	=	\$ _____ Line 2

PRIME CONTRACTOR OBTAINED PARTIAL WAIVER APPROVAL: ADOPTING MODIFIED M/WBE PARTICIPATION GOALS

<input type="checkbox"/> For Prime Contractors (including Qualified Joint Ventures and M/WBE firms) adopting Modified M/WBE Participation Goals. Calculate the total dollar value of your total bid that you agree will be awarded to M/WBE subcontractors for services and/or credited to an M/WBE prime contractor or Qualified Joint Venture. Please review the Notice to Prospective Contractors for more information on how to obtain credit for M/WBE participation.	Total Bid/Proposal Value	Adjusted Participation Goal (From Partial Waiver)		Calculated M/WBE Participation Amount
	\$ _____	X	=	\$ _____ Line 3

Section III: MWBE Utilization Plan: How Proposer/Bidder Will Fulfill MWBE Participation Goals. Please review the Notice to Prospective Contractors for more information on how to obtain credit for MWBE participation. Check applicable box. The Proposer or Bidder will fulfill the MWBE Participation Goals:

As an MWBE Prime Contractor that will self-perform and/or subcontract to other MWBE firms a portion of the contract the value of which is at least the amount located on Lines 2 or 3 above, as applicable. The value of any work subcontracted to non-MWBE firms will not be credited towards fulfillment of MWBE Participation Goals. Please check all that apply to Prime Contractor:

MBE WBE

As a Qualified Joint Venture with an MWBE partner, in which the value of the MWBE partner's participation and/or the value of any work subcontracted to other MWBE firms is at least the amount located on Lines 2 or 3 above, as applicable. The value of any work subcontracted to non MWBE firms will not be credited towards fulfillment of MWBE Participation Goals.

As a non MWBE Prime Contractor that will enter into subcontracts with MWBE firms the value of which is at least the amount located on Lines 2 or 3 above, as applicable.

Section IV: General Contract Information

What is the expected percentage of the total contract dollar value that you expect to award in subcontracts for services, regardless of MWBE status? % _____

Enter brief description of the goods and dollar value of subcontracts for all services under plan or subcontract awarded this contract. For each item, indicate whether the work is awarded for MBEs, WBEs, or both MBEs and WBEs, and the time frame in which subcontracts will be awarded. See additional sheets if necessary.

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✓ Scopes of Subcontract Work

Section V: Vendor Certification and Required Affirmations

I hereby:

- 1) acknowledge my understanding of the MWBE participation requirements as set forth herein and the pertinent provisions of Section 6-129 of the Administrative Code of the City of New York (Section 6-129), and the rules promulgated thereunder;
- 2) affirm that the information supplied in support of this MWBE Utilization Plan is true and correct;
- 3) agree, if awarded this Contract, to comply with the MWBE participation requirements of this Contract, the pertinent provisions of Section 6-129, and the rules promulgated thereunder, all of which shall be deemed to be material terms of this Contract
- 4) agree and affirm that it is a material term of this Contract that the Vendor will award the total dollar value of the MWBE Participation Goals to certified MBEs and/or WBEs, unless a full waiver is obtained or such goals are modified by the Agency; and
- 5) agree and affirm, if awarded this Contract, to make all reasonable, good faith efforts to meet the MWBE Participation Goals, or if a partial waiver is obtained or such goals are modified by the Agency, to meet the modified Participation Goals by soliciting and obtaining the participation of certified MBE and/or WBE firms.

Signature _____
Print Name _____

Date _____
Title _____

SCHEDULE B – PART III – REQUEST FOR WAIVER OF M/WBE PARTICIPATION REQUIREMENT

Contract Overview

Tax ID # _____ FMS Vendor ID # _____
 Business Name _____
 Contact Name _____ Telephone # _____ Email _____
 Type of Procurement Competitive Sealed Bids Other Bid/Response Due Date _____

APR 2013
 Contracting Agency _____

M/WBE Participation Goals as described in bid/solicitation documents

_____ %
 Agency M/WBE Participation Goal

Proposed M/WBE Participation Goal as anticipated by vendor seeking waiver

_____ % of the total contract value anticipated in good faith by the bidder/proposer to be subcontracted for services and/or credited to an M/WBE Prime Contractor or Qualified Joint Venture.

Basis for Waiver Request: Check appropriate box & explain in detail below (attach additional pages if needed)

Vendor does not subcontract services, and has the capacity and good faith intention to perform all such work itself with its own employees.

Vendor subcontracts some of this type of work but at a lower % than bid/solicitation describes, and has the capacity and good faith intention to do so on this contract. (Attach subcontracting plan outlining services that the vendor will self-perform and subcontract to other vendors or consultants.)

Vendor has other legitimate business reasons for proposing the M/WBE Participation Goal above. Explain under separate cover.

References

List recent contracts performed for NY Agencies (if any) include information for each subcontract award and performance of such contract. Add more pages if necessary.

CONTRACT NO.	AGENCY	DATE COMPLETED
Total Contract Amount \$ _____	Total Amount Subcontracted \$ _____	_____
Item of Work Subcontracted and Value of subcontract _____	Item of Work Subcontracted and Value of subcontract _____	Item of Work Subcontracted and Value of subcontract _____
CONTRACT NO.	AGENCY	DATE COMPLETED
Total Contract Amount \$ _____	Total Amount Subcontracted \$ _____	_____
Item of Work Subcontracted and Value of subcontract _____	Item of Work Subcontracted and Value of subcontract _____	Item of Work Subcontracted and Value of subcontract _____
CONTRACT NO.	AGENCY	DATE COMPLETED
Total Contract Amount \$ _____	Total Amount Subcontracted \$ _____	_____
Item of Work Subcontracted and Value of subcontract _____	Item of Work Subcontracted and Value of subcontract _____	Item of Work Subcontracted and Value of subcontract _____

List 3 most recent contracts performed for other entities. Include information for each subcontract awarded in performance of such contracts. Add more pages if necessary.
 (Complete ONLY if vendor has performed fewer than 3 New York City contracts.)

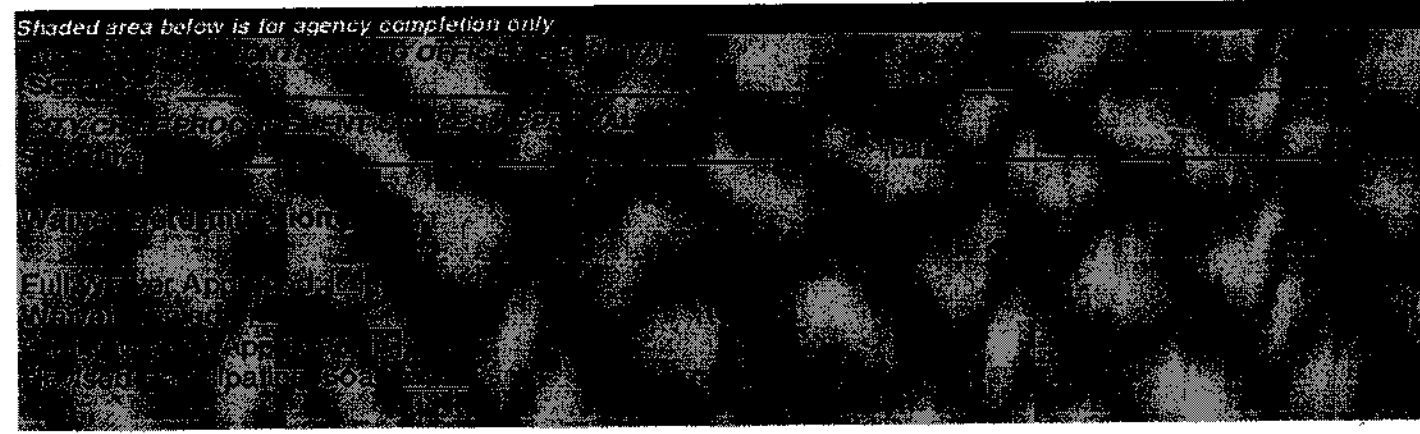
TYPE OF Contract _____	ENTITY _____	DATE COMPLETED _____
Manager at entity that hired vendor (Name/Phone No./Email) _____		
Total Contract Amount \$ _____	Total Amount Subcontracted \$ _____	_____
Type of Work Subcontracted _____	_____	_____

TYPE OF Contract _____	AGENCY/ENTITY _____	DATE COMPLETED _____
Manager at agency/entity that hired vendor (Name/Phone No./Email) _____		
Total Contract Amount \$ _____	Total Amount Subcontracted \$ _____	_____
Item of Work Subcontracted and Value of subcontract _____	Item of Work Subcontracted and Value of subcontract _____	Item of Work Subcontracted and Value of subcontract _____

TYPE OF Contract _____	AGENCY/ENTITY _____	DATE COMPLETED _____
Manager at entity that hired vendor (Name/Phone No./Email) _____		
Total Contract Amount \$ _____	Total Amount Subcontracted \$ _____	_____
Item of Work Subcontracted and Value of subcontract _____	Item of Work Subcontracted and Value of subcontract _____	Item of Work Subcontracted and Value of subcontract _____

VENDOR CERTIFICATION: I hereby affirm that the information supplied in support of this waiver request is true and correct and that this request is made in good faith.

Signature: _____ **Date:** _____
Print Name: _____ **Title:** _____



APPRENTICESHIP PROGRAM REQUIREMENTS

Bidders are advised that the Apprenticeship Program Requirements set forth below apply to each contract for which a check mark is indicated before the word "Yes". Compliance with these requirements will be determined solely by the City.

General Construction YES X NO

* Note: Even if Yes is marked, the Exemption set forth below may apply.

1) Apprenticeship Program Requirements

NOTICE TO BIDDERS: Please be advised that, pursuant to the authority granted to the City under Labor Law Section 816-b, the Department of Design and Construction hereby requires that the contractor awarded a contract as a result of this Invitation for Bids, and any of its subcontractors with subcontracts worth one million dollars or over, have, prior to entering into such contract or subcontract, apprenticeship agreements appropriate for the type and scope of work to be performed that have been registered with, and approved by, the New York State Commissioner of Labor. In addition, the contractor and its subcontractors will be required to show that such apprenticeship programs have three years of current, successful experience in providing career opportunities.

The failure to prove, upon request, that these requirements have been met shall result in the contract not being awarded to the contractor or the subcontract not being approved.

Please be further advised that, pursuant to Labor Law Section 220, the allowable ratio of apprentices to journeypersons in any craft classification shall not be greater than the ratio permitted to the contractor as to its workforce on any job under the registered

2) Apprenticeship Program Questionnaire

The bidder must submit a completed and signed Apprenticeship Program Questionnaire, unless it qualifies for the exemption set forth below. The Questionnaire is set forth on the

3) Exemption

Bidders for the General Construction Contract are advised that the exemption set forth below applies if an "X" is indicated before the word "Yes".

 YES NO

Exemption: If the bidder intends to subcontract 100% of the construction work, it is not required to demonstrate that it has an Apprenticeship Agreement(s), nor is it required to submit an Apprenticeship Program Questionnaire. If the bidder qualifies for this exemption, it shall submit a letter stating that it intends to subcontract 100% of the construction work. As indicated above, the Apprenticeship Program Requirements apply to subcontracts worth one million dollars or more.

APPRENTICESHIP PROGRAM QUESTIONNAIRE

PROJECT ID: PV181HSA2

The bidder must submit a completed and signed Apprenticeship Program Questionnaire unless it qualifies for the exemption set forth on the previous page.

Name of Bidder:

1) Does the bidder have an Apprenticeship Program appropriate for the type and scope of work to be performed? [Note: Participation may be by either direct sponsorship or through collective bargaining agreement(s).]

..... YES NO

2) Has the bidder's Apprenticeship Program been registered with, and approved by, the New York State Commissioner of Labor?

..... YES NO

3) Has the bidder's Apprenticeship Program had three years of successful experience in providing career opportunities?

..... YES NO

If the answer to Question #3 is "Yes", the bidder shall, in the space below, provide information regarding the experience the Apprenticeship Program has had in providing career opportunities. The bidder may attach additional pages if necessary.

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.....

Bidder:

By:
(Signature of Partner or Corporate Officer)

Title:

Date:

BID FORM
THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

**BID FOR FURNISHING ALL LABOR AND
MATERIAL NECESSARY AND REQUIRED FOR:**

PROJECT ID: PV181HSA2

**Harlem School of the Arts, Phase II Building Renovations
645 St. Nicholas Avenue
Manhattan 10031**

Name of Bidder: _____

Date of Bid Opening: _____

Bidder is: (Check one, whichever applies) Individual () Partnership () Corporation ()

Place of Business of Bidder: _____

Bidder's Telephone Number: _____ Bidder's Fax Number: _____

Bidder's Email Address: _____

Residence of Bidder (If Individual): _____

If Bidder is a Partnership, fill in the following blanks:

Names of Partners

Residence of Partners

If Bidder is a Corporation, fill in the following blanks:

Organized under the laws of the State of _____

Name and Home Address of President: _____

Name and Home Address of Secretary: _____

Name and Home Address of Treasurer: _____

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BID FORM

The above-named Bidder affirms and declares:

1. The said bidder is of lawful age and the only one interested in this bid; and no person, firm or corporation other than hereinbefore named has any interest in this bid, or in the Contract proposed to be taken.
2. By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief: (1) the prices in this bid have been arrived at independently without collusion, consultation, communication or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor; (2) unless otherwise required by law, the prices quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and (3) no attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.
3. No councilman or other officer or employee or person whose salary is payable in whole or in part from the City Treasury is directly or indirectly interested in this bid, or in the supplies, materials, equipment, work or labor to which it relates, or in any of the profits thereof.
4. The bidder is not in arrears to the City of New York upon debt or contract or taxes, and is not a defaulter, as surety or otherwise, upon any obligation of the City of New York, and has not been declared not responsible, or disqualified, by any agency of the City of New York or State of New York, nor is there any proceeding pending relating to the responsibility or qualification of the bidder to receive public contracts except as set forth on the Affirmation included as page 17 of this Bid Booklet.

The bidder hereby affirms that it has paid all applicable City income, excise and other taxes for all years it has conducted business activities in New York City.

5. The bidder, as an individual, or as a member, partner, director or officer of the bidder, if the same be a firm, partnership or corporation, executes this document expressly warranting and representing that should this bid be accepted by the City and the Contract awarded to him, he and his subcontractors engaged in the performance:
(1) will comply with the provisions of Section 6-108 of the Administrative Code of the City of New York and the non-discrimination provisions of Section 220a of the New York State Labor Law, as more expressly and in detail set forth in the Agreement; (2) will comply with Section 6-109 of the Administrative Code of the City of New York in relation to minimum wages and other stipulations as more expressly and in detail set forth in the Agreement; (3) have complied with the provisions of the aforesaid laws since their respective effective dates, and (4) will post notices to be furnished by the City, setting forth the requirements of the aforesaid laws in prominent and conspicuous places in each and every plant, factory, building and structure where employees engaged in the performance of the Contract can readily view it, and will continue to keep such notices posted until the supplies, materials and equipment, or work labor and services required to be furnished or rendered by the Contractor have been finally accepted by the City. In the event of any breach or violation of the foregoing, the Contractor may be subject to damages, liquidated or otherwise, cancellation of the Contract and suspension as a bidder for a period of three years. (The words, "the bidder", "he", "his", and "him" where used shall mean the individual bidder, firm, partnership or corporation executing this bid).

6. Compliance Report

The bidder, as an individual, or as a member, partner, director, or officer of the bidder, if the same be a firm, partnership, or corporation, (1) represents that his attention has been specifically drawn to Executive Order No. 50, dated April 25, 1980, on Equal Employment Compliance of the contract, and (2) warrants that he will comply with the provisions of Executive Order No. 50. The Employment Report must be submitted as part of the bid.

The bidder, as an individual, or as a member, partner, director, or officer of the bidder, if the same be a firm, partnership, or corporation, executes this document expressly warranting that he will comply with: (1) the provision of the contract on providing records, Chapter 8.

7. By submission of this bid, the bidder certifies that it now has and will continue to have the financial capability to fully perform the work required for this contract. Any award of this contract will be made in reliance upon such certification. Upon request therefor, the bidder will submit written verification of such financial capability in a form that is acceptable to the department.

8. In accordance with Section 165 of the State Finance Law, the bidder agrees that tropical hardwoods, as defined in Section 165 of the State Finance Law, shall not be utilized in the performance of this Contract, except as the same are permitted by the foregoing provision of law.

9. The bidder has visited and examined the site of the work and has carefully examined the Contract in the form approved by the Corporation Counsel, and will execute the Contract and perform all its items, covenants and conditions, and will provide, furnish and deliver all the work, materials, supplies, tools and appliances for all labor and materials necessary or required for the hereinafter named work, all in strict conformity with the Contract, for the prices set forth in the Bid Schedule:

Section V: Vendor Certification and Required Affirmations:

I hereby:

- 1) acknowledge my understanding of the M/WBE participation requirements as set forth in this Contract and the pertinent provisions of Section 6-129 of the Administrative Code of the City of New York and the rules promulgated thereunder;
- 2) affirm that the information supplied in support of the M/WBE Utilization Plan is true and correct;
- 3) agree, if awarded this Contract, to comply with the M/WBE participation requirements of this Contract, the pertinent provisions of Section 6-129, and the rules promulgated thereunder, all of which shall be deemed to be material terms of this Contract;
- 4) agree and affirm that it is a material term of this Contract that the Vendor will award the total dollar value of the M/WBE Participation Goals to certified MBEs and/or WBEs, unless a full waiver is obtained or such goals are modified by the Agency; and
- 5) agree and affirm, if awarded this Contract, to make all reasonable, good faith efforts to meet the M/WBE Participation Goals, or If a partial waiver is obtained or such goals are modified by the Agency, to meet the modified Participation Goals by soliciting and obtaining the participation of certified MBE and/or WBE firms.

BID FORM

PROJECT ID: PV181HSA2

TOTAL BID PRICE: In the space provided below, the Bidder shall indicate the total bid price in figures.

- A. **LUMP SUM PRICE** - Total price for all labor and material for all required work, excluding item (B) set forth below. Total Price shall include all costs and expenses, i.e. labor, material overhead and profit for all the Work, described and shown in the drawings and specifications.

Total Price For Labor	+	Total Price for Material Sold and Delivered	=	Total Price for Item A=
\$ _____		\$ _____		\$ _____

B. **ALLOWANCE for Incidental Asbestos Abatement** \$15,000.00
(Section 028013 of the Specifications)

TOTAL BID PRICE (Add A + B) \$ _____
(a/k/a BID PROPOSAL)

BIDDER'S SIGNATURE AND AFFIDAVIT

* **SUBCONTRACTOR IDENTIFICATION:** You MUST complete and submit the form entitled "Bidder's Identification of Subcontractors" (page 19) at the time you submit your bid. You must submit this form in a separate, sealed envelope (BID ENVELOPE #2). In the event an award of contract is not made to the Bidder, the Bidder hereby authorizes the Agency to shred the form entitled "Bidder's Identification of Subcontractors". Yes No

Bidder: _____

By: _____
(Signature of Partner or corporate officer)

Attest: _____
(Corporate Seal) Secretary of Corporate Bidder

Affidavit on the following page should be subscribed and sworn to before a Notary Public

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BID FORM (TO BE NOTARIZED)

AFFIDAVIT WHERE BIDDERS IS AN INDIVIDUAL

STATE OF NEW YORK, COUNTY OF _____ ss:

_____ being duly sworn says:

I am the person described in and who executed the foregoing bid, and the several matters therein stated are in all respects true.

(Signature of the person who signed the Bid)

Subscribed and sworn to before me this
_____ day of _____

Notary Public

AFFIDAVIT WHERE BIDDERS IS A PARTNERSHIP

STATE OF NEW YORK, COUNTY OF _____ ss:

_____ being duly sworn says:

I am a member of _____ the firm described in and which executed the foregoing bid.
I subscribed the name of the firm thereto on behalf of the firm, and the several matters therein stated are in all respects true.

(Signature of Partner who signed the Bid)

Subscribed and sworn to before me this
_____ day of _____

Notary Public

AFFIDAVIT WHERE BIDDERS IS A CORPORATION

STATE OF NEW YORK, COUNTY OF _____ ss:

_____ being duly sworn says:

I am the _____ of the above named corporation whose name is subscribed to and which executed
the foregoing bid. I reside at _____

I have knowledge of the several matters therein stated, and they are in all respects true.

(Signature of Corporate Officer who signed the Bid)

Subscribed and sworn to before me this
_____ day of _____

Notary Public

AFFIRMATION

The undersigned bidder affirms and declares that said bidder is not in arrears to the City of New York upon debt, contract or taxes and is not a defaulter, as surety or otherwise, upon obligation to the City of New York, and has not been declared not responsible, or disqualified, by any agency of the City of New York, nor is there any proceeding pending relating to the responsibility or qualification of the bidder to receive public contracts except _____

(If none, the bidder shall insert the word "None" in the space provided above.)

Full Name of Bidder: _____

Address: _____

City: _____ State: _____ Zip Code: _____

CHECK ONE BOX AND INCLUDE APPROPRIATE NUMBER:

A - Individual or Sole Proprietorship *
SOCIAL SECURITY NUMBER

B - Partnership, Joint Venture or other unincorporated organization
EMPLOYER IDENTIFICATION NUMBER

C - Corporation
EMPLOYER IDENTIFICATION NUMBER

By: _____
Signature:

Title: _____

If a corporation, place seal here

This affirmation must be signed by an officer or duly authorized representative.

* Under the Federal Privacy Act the furnishing of Social Security Numbers by bidders on City contracts is voluntary. Failure to provide a Social Security Number will not result in a bidder's disqualification. Social Security Numbers will be used to identify bidders, proposers or vendors to ensure their compliance with laws, to assist the City in enforcement of laws, as well as to provide the City a means of identifying of businesses which seek City contracts.

BIDDER'S IDENTIFICATION OF SUBCONTRACTORS

NOTICE TO BIDDERS

SUBMISSION: The Bidder must, at the time of the bid, submit the completed form on the next page ("BIDDER'S IDENTIFICATION OF SUBCONTRACTORS"). This form must be submitted in a separate, sealed envelope (BID ENVELOPE #2). Failure to do so will result in the disqualification of the bid as non-responsive.

Please be advised that pursuant to GML § 101(5) the Bidder is required to submit with its bid the names of subcontractors it intends to use to perform the following work on this contract, as well as the agreed-upon amount to be paid to each:

- plumbing and gas fitting;
- steam heating, hot water heating, ventilating and air conditioning apparatus; and
- electric wiring and standard illuminating fixtures.

NOTE: This project may not involve all of the above listed subcontractors. Please see the form on the next page which indicates the subcontractors required for this Project.

All listed subcontractors must be used to perform the work identified on this form for the amount listed. The listed subcontractors are not alternatives to each other. The list of subcontractors is to be submitted in a separate sealed envelope by completing the form 'Bidders Identification of Subcontractors' for any subcontractors intended to be used in any of the three trades listed above. If bidder intends to use its own forces for any of the above listed work, bidder should complete this form using its own name.

Failure to submit the completed form on the next page ("Bidder's Identification of Subcontractors") that includes the names of subcontractors and the agreed upon amounts to be paid to such subcontractors will render the bid non-responsive.

PLEASE NOTE: for any contract that is subject to M/WBE Participation Goals under Local Law 129, if the bidder's intention to use its own forces to do any of the above-referenced work would result in Bidder's failure to attain the Target Subcontracting Percentage identified in Schedule B (Subcontractor Utilization Plan), the bid will be non-responsive unless the bidder requests and obtains a Waiver of Target Subcontracting Percentage (Schedule B, Part III) in advance of bid submission. Failure to submit the completed 'BIDDERS IDENTIFICATION OF SUBCONTRACTORS' form that includes the names of subcontractors and the agreed upon amounts to be paid to such subcontractors will render the bid non-responsive.

After the low bid is announced, the sealed list submitted by the low bidder will be opened and the names of the subcontractors will be announced. The sealed lists of subcontractors submitted by all other bidders shall be maintained by the Agency unopened unless such bidder shall become the low bidder (e.g., the initial low bidder is found non-responsive). All unopened lists of subcontractors shall be returned to the bidders unopened after contract award, unless the bidder has given the agency permission to shred the form.

After bid submission, any change of subcontractor or agreed-upon amount to be paid to each shall require approval of the Agency upon a showing of a legitimate construction need which shall include, but not be limited to, a change in project specifications, a change in project material costs, a change to subcontractor status as determined pursuant to §222 (2)(e) of the Labor Law, or if the subcontractor has become otherwise unwilling, unable or unavailable to perform the subcontract.

Please note that the Agency will not award this contract for an amount greater than \$3 million.

BIDDER'S IDENTIFICATION OF SUBCONTRACTORS

Project ID: PV181HSA2

SUBMISSION: In addition to its Bid (Bid Envelope # 1), the Bidder must, at the time of the bid, complete and submit this form in a separate, sealed envelope (Bid Envelope # 2). To complete this form, the Bidder must identify the subcontractors it intends to use for the work listed below, as well as the dollar amount to be paid to each subcontractor. Failure to complete this form and submit it in a separate, sealed envelope will result in the disqualification of the bid as non-responsive.

The Bidder intends to use the following subcontractors. If the Bidder intends to do any of the work referenced below with its own forces, the Bidder should complete this form using its own name. If multiple subcontractors for any trade are proposed, Bidder may submit multiple copies of this form.

1. **PLUMBING CONTRACTOR:**

Description of Plumbing Work:

(Print Name)

Agreed amount to be paid Subcontractor: \$ _____

2. **HVAC CONTRACTOR:**

Description of HVAC Work:

(Print Name)

Agreed amount to be paid Subcontractor: \$ _____

3. **ELECTRICAL CONTRACTOR:**

Description of Electrical Work:

(Print Name)

Agreed amount to be paid Subcontractor: \$ _____

BIDDER'S SIGNATURE: The Bidder must sign and complete this form in the spaces provided below:

(Bidder's Signature)

(Print Name)

(Address)

(Title)

(Phone #)

(Fax#)

(Date)

BID BOND 1
FORM OF BID BOND

KNOW ALL MEN BY THESE PRESENTS. That we, _____

hereinafter referred to as the "Principal", and _____

hereinafter referred to as the "Surety" are held and firmly bound to THE CITY OF NEW YORK, hereinafter referred to as the "CITY", or to its successors and assigns in the penal sum of _____

(\$ _____), Dollars lawful money of the United States, for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Whereas, the Principal is about to submit (or has submitted) to the City the accompanying proposal, hereby made a part hereof, to enter into a contract in writing for _____

NOW, THEREFORE, the conditions of this obligation are such that if the Principal shall not withdraw said Proposal without the consent of the City for a period of forty-five (45) days after the opening of bids and in the event of acceptance of the Principal's Proposal by the City, if the Principal shall:

(a) Within ten (10) days after notification by the City, execute in quadruplicate and deliver to the City all the executed counterparts of the Contract in the form set forth in the Contract Documents, in accordance with the proposal as accepted, and

(b) Furnish a performance bond and separate payment bond, as may be required by the City, for the faithful performance and proper fulfillment of such Contract, which bonds shall be satisfactory in all respects to the City and shall be executed by good and sufficient sureties, and

(c) In all respects perform the agreement created by the acceptance of said Proposal as provided in the Information for Bidders, bound herewith and made a part hereof, or if the City shall reject the aforesaid Proposal, then this obligation shall be null and void; otherwise to remain in full force and effect.

BID BOND 2

In the event that the Proposal of the Principal shall be accepted and the Contract be awarded to him the Surety hereunder agrees subject only to the payment by the Principal of the premium therefore, if requested by the City, to write the aforementioned performance and payment bonds in the form set forth in the Contract Documents.

It is expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

There shall be no liability under this bond if, in the event of the acceptance of the Principal's Proposal by the City, either a performance bond or payment bond, or both, shall not be required by the City on or before the 30th day after the date on which the City signs the Contract.

The surety, for the value received, hereby stipulates and agrees that the obligations of the Surety and its bond shall in no way be impaired or affected by any postponements of the date upon which the City will receive or open bids, or by any extensions of time within which the City may accept the Principal's Proposal, or by any waiver by the City of any of the requirements of the Information for Bidders, and the Surety hereby waives notice of any such postponements, extensions, or waivers.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers the _____ day of _____, _____.

(Seal)

Principal (L.S.)

By: _____

(Seal)

Surety

By: _____

BID BOND 3

ACKNOWLEDGEMENT OF PRINCIPAL, IF A CORPORATION

State of _____ County of _____ ss:
On this _____ day of _____, _____, before me personally came _____ to me known, who, being by me duly sworn, did depose and say that he resides at _____ that he is the _____ of _____ the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.

Notary Public

ACKNOWLEDGEMENT OF PRINCIPAL, IF A PARTNERSHIP

State of _____ County of _____ ss:
On this _____ day of _____, _____, before me personally appeared _____ to me known and known to me to be one of the members of the firm of _____ described in and who executed the foregoing instrument, and he acknowledged to me that he executed the same as and for the act and deed of said firm.

Notary Public

ACKNOWLEDGEMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____ County of _____ ss:
On this _____ day of _____, _____, before me personally appeared _____ to me known and known to me to be the person described in and who executed the foregoing instrument and acknowledged that he executed the same.

Notary Public

AFFIX ACKNOWLEDGEMENTS AND JUSTIFICATION OF SURETIES

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BID BREAKDOWN

Submission: Bidders are advised that the requirement to submit a Bid Breakdown applies to each contract for which an "X" is indicated before the word "Yes". If required, the bidder must submit, with its bid, a completed Bid Breakdown. Failure to provide a completed Bid Breakdown may result in rejection of the bid as non-responsive.

X

YES

NO

Limitations on Use of Bid Breakdown:

Bidders are advised that the Bid Breakdown shall be used for bid analysis purposes only and shall not be binding for any other purposes under the Contract, including, without limitation, for payment purposes or in connection with a contractor claim for extra work. If the form for the Bid Breakdown does not include an item of work required by the Contract Documents, such omission shall have no effect whatsoever, nor shall it be used by the contractor in connection with a claim for extra work (i.e., work for which the contractor is entitled to a change order).

Instructions for Preparing Bid Breakdown:

- (A) The Bid Breakdown is set forth on the following pages of this Bid Booklet and is in accordance with the Construction Specification Institute (CSI) format. For all items of work listed in the Bid Breakdown, the bidder must indicate the price for labor and the price for material, as well as the estimated quantities required.
- (B) In preparing its Bid Breakdown, the bidder shall submit prices that include all costs for overhead and profit. Overhead shall include, without limitation, all costs in connection with the following: administration, management, superintendence, small tools, insurance, bonds, and provision of services or items required by the General Conditions [except for Security/Fire Guard Services and Temporary Heat]. If the Project requires Security/Fire Guard Services and/or Temporary Heat, such service(s) will be included as separate line items in the Bid Breakdown.
- (C) If an item is set forth in the Bid Breakdown, but is not included in the Contract Documents (Drawings, Specifications, General Conditions, and/or Addenda), the bidder is advised to leave the item blank and exclude the cost of the item from its grand total. In an attachment to its Bid Breakdown, the bidder shall provide a list of all items left blank.
- (D) If an item is not set forth in the Bid Breakdown, but is included in the Contract Documents (Drawings, Specifications, General Conditions, and/or Addenda), the bidder is advised to add the item to its Bid Breakdown and include the cost of the item in its grand total. In an attachment to its Bid Breakdown, the bidder shall provide a list of all items added.

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Project: Harlem School of the Arts, Phase II Building Renovations
Location: 645 St. Nicholas Avenue, NY NY 10031
Bidder:

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

DDC ID: PV181HSA2
Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
CONTRACT 1 - GENERAL CONSTRUCTION WORK								
Division 1	GENERAL REQUIREMENTS							
010000	Mobilization		LS					
	Subtotal							
011010	Summary of Work (Included w/ General Conditions)							
Division 2	EXISTING CONDITIONS							
024119	Selective Removals & Demolition							
	Exterior Ramp and Stairs		SF					
	Interior Stairs with handrail		SF					
	Sawcut floor and roof openings		SF					
	CMU block & brick wall		SF					
	Gypsum Board		SF					
	Double Doors and Frames		EA					
	Single Doors and Frames		EA					
	Skylight		LS					
	Miscellaneous Demolition							
	Mechanical Demolition							
	Remove Existing Multi-Zone AHU Unit		EA					
	Remove Existing Ductwork and Accessories		LS					
	Remove Existing HW Piping		LS					
	Remove Existing Controls		LS					
	Garbage Removal, Rental and Carting		LS					
	Handling All Materials (SCAFF, ACT, GWB)		LS					

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Project: Harlem School of the Arts, Phase II Building Renovations
Location: 645 St. Nicholas Avenue, NY NY 10031
Bidder:

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

DDC ID: PV181HSA2
Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Plumbing Demolition							
	Plumbing demolition		LS					
	Misc Plumbing demolition		LS					
	Subtotal							
Division 3	CONCRETE							
033000	Cast-In-Place Concrete							
	Exterior concrete ramp		LF					
	Exterior concrete stairs and landing		SF					
	Interior concrete stairs		CY					
	Elevator wall foundation and pit		CY					
	Underpinning		LS					
	Subtotal							
Division 4	MASONRY							
042000	Unit Masonry							
	CMU Elevator shaft		SF					
	Subtotal							
Division 5	WOOD, PLASTICS, AND COMPOSITES							
051200	Structural Steel							
	W8x15		LF					
	W12x26		LF					
	Struct. Steel for Acoust. Panel Supports, Incl. Painting		LBS					
	Subtotal							
053100	Fluted Steel Deck							
	Metal Deck		SF					
	Subtotal							

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

CONTRACTORS BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Harlem School of the Arts, Phase II Building Renovations

Location: 645 St. Nicholas Avenue, NY NY 10031

Bidder:

DDC ID: PV181HSA2

Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
055000	Metal Fabrications							
	Railings and Handrails (exterior, SS)		LF					
	Railings and Handrails (Galv)		LF					
	Misc. Steel, Angles, Bolts, Etc		LS					
	Subtotal							
Division 6	WOOD, PLASTICS, AND COMPOSITES							
061053	Wood Nailers and Blocking							
	Wood Nailers and Blocking		LS					
	Wood Nailers & Blockings (for Acoustical Panel Sys.)		LS					
	Subtotal							
Division 7	THERMAL AND MOISTURE PROTECTION							
070150	Maintenance of Membrane Roofing (Included w/ 075100)							
071613	Cementitious Waterproofing							
	Cementitious Waterproofing		SF					
	Subtotal							
075100	Built-Up Bituminous Roofing							
	Built-Up Bituminous Roofing		SF					
	Built-up Bituminous Roofing @ Each Curb-for Acoustical Panel Sys.		EA					
	Subtotal							
076100	Flashing and Sheetmetal							
	Flashing and Sheetmetal		LS					
	Flashing and Sheet Metal (at Roof Curbs for Acoustical Pnl Sys.)		EA					
	Subtotal							

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Project: Harlem School of the Arts, Phase II Building Renovations
Location: 645 St. Nicholas Avenue, NY NY 10031
Bidder:

CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

DDC ID: PV181HSA2
Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
078400	Firestopping/ Smoke Seals		LS					
	Firestopping/ Smoke Seals							
	Subtotal							
079200	Joint Sealers							
	Joint Sealers		LS					
	Joint Sealers (for for Acoustical Panal Sys.)		SF					
	Subtotal							
Division 8	OPENINGS							
081102	Steel Doors and Frames							
	Interior single doors		EA					
	Interior double doors		EA					
	Interior frame 6'-0"x7'-0"H		EA					
	Interior frame 3'-0"x7'-0"H		EA					
	Roll up door		EA					
	Subtotal							
081116	Aluminum Doors and Frames							
	Exterior entrance doors, Glazed		EA					
	Exterior entrance frame		EA					
	Subtotal							
085123	Steel Windows (Included w/ 088100)							
087100	Finish Hardware							
	Finish Hardware		SET					
	Subtotal							
088100	Glass and Glazing							
	Glass and Glazing		SF					
	Subtotal							

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NEW YORK CITY DEPARTMENT OF
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CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

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Location: 645 St. Nicholas Avenue, NY NY 10031

Bidder:

DDC ID: PV181HSA2

Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
089100	Stationary Metal Wall Louvers							
	Stationary Metal Wall Louvers		EA					
	Subtotal							
Division 9	FINISHES							
092116	Gypsum Board Assemblies							
	Gypsum Board Assemblies		SF					
	Subtotal							
092214	Furring for Gypsum Board Ceilings (included w/ 092116)							
093013	Ceramic Tile							
	Ceramic Tile		SF					
	Cove Base 4 1/4x4 1/4		LF					
	Subtotal							
095300	Suspended Acoustical Ceiling System							
	Suspended Acoustical Ceiling System		SF					
	Subtotal							
096519	Resilient Flooring							
	Porcelain Floor Tiles		SF					
	Subtotal							
099000	Painting							
	Painting		SF					
	Subtotal							

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NEW YORK CITY DEPARTMENT OF
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CONTRACTOR'S BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Harlem School of the Arts, Phase II Building Renovations

Location: 645 St. Nicholas Avenue, NY NY 10031

Bidder:

DDC ID: PV181HSA2

Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
Division 10	SPECIALTIES							
102113	Metal Toilet Compartments							
	Metal Toilet Compartments		EA					
	Subtotal							
102813	Toilet and Bath Accessories							
	Toilet and Bath Accessories		LS					
	Subtotal							
Division 13	SPECIAL CONSTRUCTION							
134813	Acoustical Panel Systems							
	Acoustical Panels, 12' Hot Dip Galv. 3 lb/sf Fill		SF					
	Subtotal							
Division 14	CONVEYING EQUIPMENT							
142420	Hydraulic Vertical Platform Lift							
	Platform Vertical Lift (Based on Savaria V1504, type 2), pitless 36"X54", 750 Lbs, 21" travel/ with built in control, 3" ramp		LS					
	Electrical Material (Cab)		LS					
	Subtotal							
142423	Hydraulic Passenger Elevator							
	Controller		LS					
	Power Unit		LS					
	Holeless Jack Assembly		LS					
	Landing/Leveling System		LS					
	Cab Platform		LS					
	Cab Enclosure		LS					
	Car Door Sill (2)		LS					
	Cab Flooring		LS					
	Guides		LS					

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

CONTRACTORS BID BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Harlem School of the Arts, Phase II Building Renovations

Location: 645 St. Nicholas Avenue, NY NY 10031

Bidder:

DDC ID: PV181HSA2

Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Car Door Operator & Clutch (2)		LS					
	Car Door Track and Hangers (2 sets)		LS					
	Car Door Protection Infrared Beam (2)		LS					
	Car Pushbutton Station		LS					
	Car Travel Lantern (2)		LS					
	Car Position Indicator		LS					
	Emergency Communication System		LS					
	Top of Car Inspection Box		LS					
	Hall Push Buttons w/Position Indicators (3)		LS					
	Hall Door Entrances Complete (3)		LS					
	Hoistway Limit Switches (Top & Bottom)		LS					
	Pit Stop Switch		LS					
	Traveling Cable		LS					
	Electrical Material (Hoistway)		LS					
	Electrical Material (Motor Room)		LS					
	Electrical Material (Cab)		LS					
	Pit Steel & Buffers		LS					
	Pit Ladder		LS					
	Scavenger Pump		LS					
	Adjusting and Testing		LS					
	Miscellaneous Elevator Work		LS					
	Subtotal							
Division 21	FIRE PROTECTION							
210301	General Provisions for Fire Protection Systems Work (Included w/ 211313)							
211313	Sprinkler Systems							
	SPRINKLER PIPING w/S FITTINGS & HANGERS							
	1" PIPE		FT					
	1-1/4" PIPE		FT					

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

CONTRACT BIDDING BREAKDOWN FORM

CONTRACT 1 - General Construction

Project: Harlem School of the Arts, Phase II Building Renovations
Location: 645 St. Nicholas Avenue, NY NY 10031
Bidder:

DDC ID: PV181HSA2
Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	1-1/2" PIPE		FT					
	2" PIPE		FT					
	2-1/2" PIPE		FT					
	3" PIPE		FT					
	SPRINKLER HEADS		EA					
	WATER FLOW SWITCH		EA					
	TAMPER SWITCH		EA					
	TESTING		EA					
	RIGGING		EA					
	MISC		LS					
	Subtotal							
Division 22	PLUMBING							
220401	General Provisions for Plumbing Work (Included w/ 220523, 220800, 221100)							
220410	Plumbing Piping							
	3" STORM - BELL & SPIGOT W/ TRENCH/BACKFILL		LF					
	4" STORM PIPING - NO-HUB C.I. W/ FITTINGS & HANGERS		LF					
	1-1/2" C.I. SANITARY/VENT PIPING - NO-HUB		LF					
	1/2" COPPER PIPING - TYPE L -WATER		LF					
	3/4" COPPER PIPING - TYPE L -WATER		LF					
	1" COPPER PIPING - TYPE L -WATER		LF					
	1-1/4" COPPER PIPING - TYPE L -WATER		LF					
	1-1/2" COPPER PIPING - TYPE L -WATER		LF					
	2" COPPER PIPING - TYPE L -WATER		LF					
	1" N. GAS - SCH. 40 W/ FITTINGS & HANGERS		LF					
	1-1/2" N. GAS - SCH. 40 W/ FITTINGS & HANGERS		LF					
	2" N. GAS - SCH. 40 W/ FITTINGS & HANGERS		LF					
	3" N. GAS - SCH. 40 W/ FITTINGS & HANGERS		LF					
	4" N. GAS - SCH. 40 W/ FITTINGS & HANGERS		LF					
	6" N. GAS - SCH. 40 W/ FITTINGS & HANGERS		LF					

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Project: Harlem School of the Arts, Phase II Building Renovations

Location: 645 St. Nicholas Avenue, NY NY 10031

Bidder:

CONTRACT ID: PV181HSA2

CONTRACT 1 - General Construction

DDC ID: PV181HSA2

Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	PLUMBING PIPING w/ FITTINGS, HANGERS							
	4" C.I. SANITARY PIPING - NO-HUB		LF					
	3" C.I. SANITARY PIPING - NO-HUB		LF					
	2" C.I. SANITARY/VENT PIPING - NO-HUB		LF					
	1-1/2" C.I. SANITARY/VENT PIPING - NO-HUB		LF					
	1/2" COPPER PIPING - TYPE L -WATER		LF					
	3/4" COPPER PIPING - TYPE L -WATER		LF					
	1" COPPER PIPING - TYPE L -WATER		LF					
	1-1/4" COPPER PIPING - TYPE L -WATER		LF					
	RIGGING		LS					
	Subtotal							
220424	Backflow Preventors		EA					
	Backflow Preventors		EA					
	RPZ WATTS 009 M3QT ASSBLY-1"		EA					
	Subtotal							
220519	Cold Water Meters (Included w/ 220523, 220800, 221100)							
220523	Valves							
	1/2" BALL VALVE		EA					
	3/4" BALL VALVE		EA					
	1" BALL VALVE		EA					
	1-1/2" BALL VALVE		EA					
	2" BALL VALVE		EA					
	1" PLUG VALVE		EA					
	1-1/2" PLUG VALVE		EA					
	2" PLUG VALVE		EA					
	1" BALANCING VALVE		EA					
	Subtotal							

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

CONTRACT 1 - GENERAL CONSTRUCTION

Project: Harlem School of the Arts, Phase II Building Renovations

Location: 645 St. Nicholas Avenue, NY NY 10031

Bidder:

DDC ID: PV181HSA2

Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
220529	Pipe Hangers and Supports (Included w/ 220410)							
220553	Pipe and Valve Identification Pipe and Valve Identification		LS					
	Subtotal							
220576	Drainage Accessories Drainage Accessories		LS					
	Subtotal							
220577	Floor and Area Drains Floor and Area Drains Area Drains Trench Drains Relocation of Roof Drain		LS EA EA EA					
	Subtotal							
220700	Piping Insulation Piping Insulation		LS					
	Subtotal							
220800	Cleaning and Testing Cleaning and Testing		LS					
	Subtotal							
221116	Vacuum Breakers (Included w/ 220410)							

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

COUNTY OF DADE DEPARTMENT OF PUBLIC WORKS

CONTRACT 1 - General Construction

Project: Harlem School of the Arts, Phase II Building Renovations
Location: 645 St. Nicholas Avenue, NY NY 10031
Bidder:

DDC ID: PV181HSA2

Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
221119	Water Supply Accessories		LS					
	Water Supply Accessories							
	Subtotal							
221122	Thermometers and Gages		LS					
	Thermometers and Gages							
	Subtotal							
221123	Gas Piping System (Included w/ 220410)							
221429	Sump Pump Submersible ELEVATOR SUMP PUMP- 1/3HP, 10 GPM @20TDH		EA					
	Subtotal							
223301	Domestic Water Heater 98 GAL., 90 MBH Gas Firing, with piping		EA					
	Subtotal							
224200	Plumbing Fixtures WATER CLOSETS w/ CARRIER, FLUSH VALVE, ETC. URINALS w/ CARRIER, FLUSH VALVE LAVATORIES w/ SUPPORTS, FAUCET, DRAIN, ETC. SHOWERS FLOOR DRAINS		EA EA EA EA EA					
	Subtotal							
224453	Pumps RE-CIRC PUMP		EA					
	Subtotal							
Division 23	HVAC							
230501	Basic Heating, Ventilation and Air-Conditioning Requirements (Included w/ 230593, 230594) Temporary Heat		LS					
	Subtotal							

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Project: Harlem School of the Arts, Phase II Building Renovations
Location: 645 St. Nicholas Avenue, NY NY 10031
Bidder:

CONTRACT 1 - General Construction

DDC ID: PV181HSA2
Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
230503	HVAC Piping							
	1" PIPE		LF					
	2" PIPE		LF					
	3" PIPE (COPPER)		LF					
	FITTINGS		LS					
	Subtotal							
230523	Valves (HVAC)							
	3" BALL VALVES		EA					
	3" BALLANCING VALVES		EA					
	1" BALL VALVES		EA					
	2" BALL VALVES		EA					
	Subtotal							
230549	Vibration Isolation							
	SPRING TYPE VIBRATION ISOLATORS		EA					
	NEOPRENE PADS		EA					
	Subtotal							
230553	HVAC Identification							
	HVAC Identification		LS					
230593	Cleaning and Testing							
	CLEANING AND TESTING		LS					
	DUCT CLEANING		LS					
	CLEANING & GARBAGE REMOVAL		LS					
	RIGGING		LS					
	MISCELLANEOUS		LS					
	Subtotal							

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

CONTRACTORS BIDDING DOWN FORM

CONTRACT 1 - General Construction

Project: Harlem School of the Arts, Phase II Building Renovations

Location: 645 St. Nicholas Avenue, NY NY 10031

Bidder:

DDC ID: PV181HSA2

Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
230594	Balancing of Systems		LS					
	Balancing of Systems							
	Subtotal							
230701	Piping Insulation							
	1" PIPE INSULATION		LF					
	2" PIPE INSULATION		LF					
	3" PIPE INSULATION		LF					
	Subtotal							
230702	Equipment Insulation (Included w/ 235100, 235224)							
230703	Ductwork Insulation							
	Ductwork Insulation		SF					
	Subtotal							
230923	TCS with Web-Based Building Management							
	TEMPERATURE SENSORS		EA					
	HVAC CONTROLS - CONTROLLER		EA					
	HVAC CONTROLS - LOW VOLTAGE		LS					
	HVAC CONTROLS - BMS		LS					
	INSTRUMENTATIONS AND CONTROLS		LS					
	WALL REPAIR, TOUCH-UP PAINTING		LS					
	Subtotal							
230993	Sequence of Operations (Included w/ 230923)							
232003	Thermometers and Gages							
	Thermometers and Gages		LS					
	Subtotal							

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

CONTRACTOR'S BID BREAKDOWN (C.B.B.)

CONTRACT 1 - General Construction

Project: Harlem School of the Arts, Phase II Building Renovations

Location: 645 St. Nicholas Avenue, NY NY 10031

Bidder:

DDC ID: PV181HSA2

Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
232116	Hydronic Specialties AIR SEPARATOR		EA					
	AIR VENT (HIGH CAPACITY) EXPANSION TANK		EA					
	Subtotal							
232123	Hydronic Pumps Hydronic Pumps		EA					
	Subtotal							
232500	Water Treatment - HVAC CHEMICAL FEEDER		EA					
	Subtotal							
233113	Metal Ductwork Metal Ductwork		LBS					
	Subtotal							
233300	Ductwork Accessories Ductwork Accessories		LS					
	Subtotal							
233313	Dampers VOLUME DAMPERS COMBUSTION DAMPER FSD		EA EA EA					
	Subtotal							
233400	Centrifugal Fans Centrifugal Fans VARIABLE AIR TERMINALS (VAV BOXES)		EA EA					
	Subtotal							

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

CONTRACTOR'S BIDDING RESPONSIBILITY FORM

CONTRACT 1 - General Construction

Project: Harlem School of the Arts, Phase II Building Renovations
 Location: 645 St. Nicholas Avenue, NY NY 10031
 Bidder: _____

DDC ID: PV181HSA2

Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
235100	Breeching, Chimneys and Stacks		EA					
	Breeching, Chimneys and Stacks							
	Subtotal							
235201	Boiler Accessories (Included w/ 235223)							
235223	Cast Iron Boilers		EA					
	cast Iron Boilers							
	Subtotal							
235224	Fuel Burning Equipment (for Hot Water Boilers) (Included w/ 235223)							
236313	Air Cooled Condensing Units		EA					
	Air Cooled Condensing Units							
	Subtotal							
237313	Air Handling Units		EA					
	AIR HANDLING UNIT (Elev.Mach Rm)							
	Subtotal							
238106	Commercial Packaged Rooftop Heating and Cooling Units		EA					
	(GAS-FIRED ROOFTOP UNITS (FOR VAV, WITH VFD)							
	Subtotal							
Division 26	ELECTRICAL							
260501	General Provisions for Electrical Work							
	TEMPORARY ELECTRIC & LIGHTING		LS					

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

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Bidder:

CONTRACT 1 - General Construction

DDC ID: PV181HSA2
Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	DISCONNECT FOR REMOVAL AC2/3/4/5		LS					
	DISCONNECT FOR REMOVAL P1/2/3 & BLOWER		LS					
	REMOVE MISC ELECTRICAL		LS					
	Subtotal							
260522	Wiring Systems							
	POWER WIRING & CONDUITS		LS					
	FINAL TERMINATIONS AND CONNECTIONS		LS					
	WALL SWITCH		LS					
	GFI RECEPTACLES		EA					
	Subtotal							
260523	Elevator Wiring (Included w/ 260522)							
260526	Grounding and Bonding (Included w/ 260522)							
260533	Raceways and Boxes for Electrical System (Included w/ 260522)							
262416	Panelboards							
	BREAKER PANELBOARD		EA					
	CIRCUIT BREAKER		LS					
	Subtotal							
262419	Motors, Starters and Control Equipment							
	COMBINATION MOTOR STARTER		LS					
	VFD INSTALLATION		LS					
	Subtotal							

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Project: Harlem School of the Arts, Phase II Building Renovations
Location: 645 St. Nicholas Avenue, NY NY 10031
Bidder:

CONTRACT ID: PV181HSA2

CONTRACT 1 - General Construction

DDC ID: PV181HSA2
Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
262812	Safety Switches							
	SAFETY DISCONNECT SWITCH NEMA 3R NONFUSE		EA					
	600A		EA					
	400A		EA					
	200A		EA					
	60A		EA					
	SAFETY DISCONNECT SWITCH NEMA 12 FUSED							
	200 A		EA					
	60A		EA					
	FUSES		EA					
	Subtotal							
265190	Interior Building Lighting							
	INTERIOR LIGHTING (BATHROOM LIGHTING)		EA					
	Subtotal							
265192	Lamps, Ballasts and Accessories							
	LAMPS, BALLASTS AND ACCESS.(LED BULBS)		EA					
	Subtotal							
Division 28	ELECTRONIC SAFETY AND SECURITY							
283101	Fire Detection and Alarm System							
	FIRE ALARM CONNECTIONS AND REPROGRAMING		LS					
	Addressable Smoke Detector		EA					
	Addressable Heat Detector		EA					
	New strobes		EA					
	Interface devices W/Remote indicator		EA					
	Duct Smoke Detectors/ with modules		EA					

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

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Bidder:

CONTRACT 1 - General Construction

DDC ID: PV181HSA2

Sponsor Agency: DCA

CSI Number	Description	Quantity	Unit	Unit Cost of Material	Total Cost of Material	Unit Cost of Labor	Total Cost of Labor	Total Cost: Materials and Labor
	Connections for HVAC shutdown		LS					
	Carbon Monoxide Monitor		EA					
	Elevator Recall Monitor		EA					
	Reprogramming W/Third Party Monitoring		LS					
	Back Boxes, Splicing		LS					
	Scaffold rental, covers, setup and take-down		LS					
	FDNY Testing		HR					
	Cable-Fire rated Device gage		LF					
	Cable-Fire rated Alarm gage		LF					
	EMT-3/4"		LF					
	APPLY FOR PERMITS		LS					
	Miscellaneous Material		LS					
	Hardware, Mounting supports		LS					
	Subtotal							
Division 31	EARTHWORK							
310000	Earthwork (Included w/ 033000)							
312343	EPS Geofoam (Included w/ 033000)							
TOTAL CONTRACT 1 - GENERAL CONSTRUCTION WORK								

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ATTACHMENT 1 - BID INFORMATION
PROJECT ID: PV181HSA2

DESCRIPTION AND LOCATION OF WORK:

Harlem School of the Arts Phase II Building Renovations
 645 St. Nicholas Avenue,
 New York, NY 10030
 E-PIN: 85015B0170 / DDC PIN: 8502015PV0018C

DOCUMENTS AVAILABLE AT:

Department of Design and Construction, Contract Section
 30-30 Thomson Avenue - First Floor, Long Island City, NY 11101

SUBMISSION OF BIDS BEFORE BID OPENING:**TIME TO SUBMIT:**

On or Before: **WEDNESDAY, NOVEMBER 18, 2015**

BIDS MUST BE CLOCKED IN PRIOR TO BID OPENING

PLACE TO SUBMIT:

Department of Design and Construction, Contract Section (located behind Security Desk)
 30-30 Thomson Avenue - First Floor, Long Island City, NY 11101

BID OPENING:

PLACE OF BID OPENING:	Department of Design and Construction Contract Section 30-30 Thomson Avenue - First Floor Long Island City, NY 11101
DATE AND HOUR:	WEDNESDAY, NOVEMBER 18, 2015 AT 2:00 PM
	LATE BIDS WILL NOT BE ACCEPTED

PRE-BID WALK-THRU AND CONFERENCE:

PLACE	Harlem School of the Arts 645 St. Nicholas Avenue, Room 232 New York, NY 10030
DATE AND HOUR	WEDNESDAY, OCTOBER 28, 2015 AT 10:00 AM
MANDATORY OR OPTIONAL	OPTIONAL

BID SECURITY:

Bid Security is required in the amount set forth below; provided, however, bid security is not required if the TOTAL BID PRICE set forth on the Bid Form is less than \$1,000,000.

- (1) Bond in an amount not less than 10% of the TOTAL BID PRICE set forth on the Bid Form, OR
- (2) Certified Check in an amount not less than 2% of the TOTAL BID PRICE set forth on the Bid Form

PERFORMANCE AND PAYMENT SECURITY:

Required for Contracts in the amount of \$1,000,000.00 or more. Performance and Payment Security shall each be in an amount equal to 100% of the Contract Price

AGENCY CONTACT PERSON:

Lorraine Holley, 30-30 Thomson Avenue - First Floor, Long Island City, Queens, NY 11101
 Telephone (718) 391-3170 or (718) 391-1016 Fax: (718) 391-2615

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**BID BOOKLET
PART B**

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SAFETY QUESTIONNAIRE

The bidder must include, with its bid, all information requested on this Safety Questionnaire. Failure to provide a completed and signed Safety Questionnaire at the time of bid opening may result in disqualification of the bid as non-responsive.

1. Bidder Information:

Company Name: _____

DDC Project Number: _____

Company Size: _____ Ten (10) employees or less
 _____ Greater than ten (10) employees

Company has previously worked for DDC _____ YES _____ NO

2. Type(s) of Construction Work

TYPE OF WORK	LAST 3 YEARS	THIS PROJECT
General Building Construction	_____	_____
Residential Building Construction	_____	_____
Nonresidential Building Construction	_____	_____
Heavy Construction, except building	_____	_____
Highway and Street Construction	_____	_____
Heavy Construction, except highways	_____	_____
Plumbing, Heating, HVAC	_____	_____
Painting and Paper Hanging	_____	_____
Electrical Work	_____	_____
Masonry, Stonework and Plastering	_____	_____
Carpentry and Floor Work	_____	_____
Roofing, Siding, and Sheet Metal	_____	_____
Concrete Work	_____	_____
Specialty Trade Contracting	_____	_____
Asbestos Abatement	_____	_____
Other (specify)	_____	_____

3. Experience Modification Rate:

The Experience Modification Rate (EMR) is a rating generated by the National Council of Compensation Insurance (NCCI). This rating is used to determine the contractor's premium for worker's compensation insurance. The contractor may obtain its EMR by contacting its insurance broker or the NCCI. If the contractor cannot obtain its EMR, it must submit a written explanation as to why.

The Contractor must indicate its Intrastate and Interstate EMR for the past three years. [Note: For contractors with less than three years of experience, the EMR will be considered to be 1.00].

YEAR	INTRASTATE RATE	INTERSTATE RATE
_____	_____	_____
_____	_____	_____
_____	_____	_____

If the Intrastate and/or Interstate EMR for any of the past three years is greater than 1.00, the contractor must attach, to this questionnaire, a written explanation for the rating and identify what corrective action was taken to correct the situation resulting in that rating.

4. OSHA Information:

YES NO Contractor has received a willful violation issued by OSHA or New York City Department of Buildings (NYCDOB) within the last three years.

YES NO Contractor has had an incident requiring OSHA notification within 8 hours (all work-related fatalities) or an incident requiring OSHA notification within 24 hours (all work-related inpatient hospitalizations, all amputations and all losses of an eye).

The Occupational Safety and Health Act (OSHA) of 1970 requires employers with ten or more employees, on a yearly basis to complete and maintain on file the form entitled "Log of Work-related Injuries and Illnesses". This form is commonly referred to as the OSHA 300 Log (OSHA 200 Log for 2001 and earlier).

The OSHA 300 Log must be submitted for the last three years for contractors with more than ten employees.

The Contractor must indicate the total number of hours worked by its employees, as reflected in payroll records for the past three years.

The contractor must submit the Incident Rate for Lost Time Injuries (the Incident Rate) for the past three years. The Incident Rate is calculated in accordance with the formula set forth below. For each given year, the total number of incidents is the total number of non-fatal injuries and illnesses reported on the OSHA 300 Log. The 200,000 hours represents the equivalent of 100 employees working forty hours a week, fifty weeks per year.

Incident Rate =
$$\frac{\text{Total Number of Incidents} \times 200,000}{\text{Total Number of Hours Worked by Employees}}$$

YEAR	TOTAL NUMBERS OF HOURS WORKED BY EMPLOYEES	INCIDENT RATE
_____	_____	_____
_____	_____	_____
_____	_____	_____

If the contractor's Incident Rate for any of the past three years is one point higher than the Incident Rate for the type of construction it performs (listed below), the contractor must attach, to this questionnaire, a written explanation for the relatively high rate.

General Building Construction	8.5
Residential Building Construction	7.0
Nonresidential Building Construction	10.2
Heavy Construction, except building	8.7
Highway and Street Construction	9.7
Heavy Construction, except highways	8.3
Plumbing, Heating, HVAC	11.3
Painting and Paper Hanging	6.9
Electrical Work	9.5
Masonry, Stonework and Plastering	10.5
Carpentry and Floor Work	12.2
Roofing, Siding, and Sheet Metal	10.3
Concrete Work	8.6
Specialty Trade Contracting	8.6

5. Safety Performance on Previous DDC Project(s)

YES NO Contractor previously audited by the DDC Office of Site Safety.
 DDC Project Number(s): _____

YES NO Accident on previous DDC Project(s).
 DDC Project Number(s): _____

YES NO Fatality or Life-altering Injury on DDC Project(s) within the last three years.
 [Examples of a life-altering injury include loss of limb, loss of a sense (e.g., sight, hearing), or loss of neurological function].
 DDC Project Number(s): _____

Date: _____

By: _____
 (Signature of Owner, Partner, Corporate Officer)

Title: _____

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Pre-Award Process

The bidder is advised that as part of the pre-award review of its bid, it may be required to submit the information described in Sections (A) through (D) below. If required, the bidder must submit such information within five (5) business days following receipt of notification from DDC that it is among the low bidders. Such notification from DDC will be by facsimile or in writing and will specify the types of information which must be submitted.

In the event the bidder fails to submit the required information within the specified time frame, its bid may be rejected as nonresponsive.

- (A) **Project Reference Form:** If required, the bidder must complete and submit the Project Reference Form set forth on pages 28 through 30 of this Bid Booklet. The Project Reference Form consists of 3 parts: (1) Similar Contracts Completed by the Bidder, (2) Contracts Currently Under Construction by the Bidder, and (3) Pending Contracts Not Yet Started by the Bidder.
- (B) **Copy of License:** If required, the bidder must submit a copy of the license under which the bidder will be performing the work. Such license must clearly show the following: (1) Name of the Licensee, (2) License Number, and (3) Expiration date of the License. A copy of the license will be required from bidders for the following contracts: Plumbing Work, Electrical Work and Asbestos Abatement.
- (C) **Financial Information:** If required, the bidder must submit the financial information described below:
- (1) **Audited Financial Statements:** Financial statements (Balance Sheet and Income Statement) of the entity submitting the bid, as audited by an independent auditor licensed to practice as a certified public accountant (CPA). Audited financial statements for the three most recent fiscal years must be submitted. Each such financial statement must include the auditor's standard report.
- If the bidder does not have audited financial statements, it must submit an affidavit attesting to the fact that the bidder does not have such statements. In addition, the bidder must submit the following documentation covering the three most recent fiscal years: signed federal tax returns, unaudited financial statements, and a "certified review letter" from a certified public accountant (CPA) verifying the unaudited financial statements.
- Unless the most recent audited or unaudited financial statement was issued within ninety (90) days, the bidder must submit interim financial information that includes data on financial position and results of operation (income data) for the current fiscal year. Such information may be summarized on a monthly or quarterly basis or at other intervals.
- (2) **Schedule of Aged Accounts Receivable,** including portion due within ninety (90) days.
- (D) **Project Specific Information:** If required, the bidder must submit the project specific information described below:
- (1) Statement indicating the number of years of experience the bidder has had and in what type of construction.
- (2) Resumes of all key personnel to be involved in the project, including the proposed project superintendent.
- (3) List of significant pieces of equipment expected to be used for the contract, and whether such equipment is owned or leased.

- (4) Description of work expected to be subcontracted, and to what firms, if known.
- (5) List of key material suppliers.
- (6) Preliminary bar chart time schedule
- (7) Contractor's expected means of financing the project. This should be based on the assumption that the contractor is required to finance 2X average monthly billings throughout the contract period.
- (8) Any other issues the contractor sees as impacting his ability to complete the project according to the contract.

In addition to the information described in Sections (A) through (D) above, the bidder shall submit such additional information as the Commissioner may require, including without limitation, an explanation or justification for specific unit price items.

The bidder is further advised that it may be required to attend a pre-award meeting with DDC representatives. If such a meeting is convened, the bidder will be advised as to any additional material to be provided.

A. PROJECT REFERENCES – SIMILAR CONTRACTS COMPLETED BY THE BIDDER

List all contracts substantially completed within the last 4 years similar to the contract being awarded, up to a maximum of 10, in descending order of date of substantial completion.

Project & Location	Contract Type	Contract Amount (\$000)	Date Completed	Owner Reference & Tel. No.	Architect/Engineer Reference & Tel. No. if different from owner

B. PROJECT REFERENCES - CONTRACTS CURRENTLY UNDER CONSTRUCTION BY THE BIDDER

List all contracts currently under construction even if they are not similar to the contract being awarded.

Project & Location	Contract Type	Contract Amount (\$000)	Subcontracted to Others (\$000)	Uncompleted Portion (\$000)	Date Scheduled to Complete	Owner Reference & Tel. No.	Architect/Engineer Reference & Tel. No. if different from owner

C. PROJECT REFERENCES - PENDING CONTRACTS NOT YET STARTED BY THE BIDDER

List all contracts awarded to or won by the bidder but not yet started.

Project & Location	Contract Type	Contract Amount (\$000)	Date Scheduled to Start	Owner Reference & Tel. No.	Architect/Engineer Reference & Tel. No. if different from owner

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OFFICE OF THE MAYOR
BUREAU OF LABOR SERVICES
CONTRACT CERTIFICATE

To be completed if the contract is less than \$1,000,000

Contractor: _____

Address: _____

Telephone Number: _____

Name and Title of Signatory: _____

Contracting Agency or Owner: _____

Project Number: _____

Proposed Contract Amount: _____

Description and Address of Proposed Contract: _____

Names of Subcontractors in the amount of 750,000 or more on this contract (if not known at this time, so state indicating that trades will be subcontracted):

I, (fill in name of person signing) _____
hereby affirm that I am authorized by the above-named contractor to certify that said contractor's proposed contract with the above-named owner or city agency is less than \$1,000,000. This affirmation is made in accordance with Executive Order No. 50 (1980) as amended and its implementing regulations.

Date

Signature

WILLFUL OR FRAUDULENT FALSIFICATION OF ANY DATA OR INFORMATION SUBMITTED HEREWITH MAY RESULT IN THE TERMINATION OF ANY CONTRACT BETWEEN THE CITY AND THE BIDDER OR CONTRACTOR AND BAR THE BIDDER OR CONTRACTOR FROM PARTICIPATION IN ANY CITY CONTRACT FOR A PERIOD OF UP TO THREE YEARS. FURTHER, SUCH FALSIFICATION MAY RESULT IN CRIMINAL PROSECUTION.

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VENDEX COMPLIANCE

(A) **Vendex Fees:** Pursuant to Procurement Policy Board Rule 2-08(f)(2), the contractor will be charged a fee for the administration of the VENDEX system, including the Vendor Name Check process, if a Vendor Name Check review is required to be conducted by the Department of Investigation. The contractor shall also be required to pay the applicable required fees for any of its subcontractors for which Vendor Name Check reviews are required. The fee(s) will be deducted from payments made to the contractor under the contract. For contracts with an estimated value of less than or equal to \$1,000,000, the fee will be \$175 per Vendor Name Check review. For contracts with an estimated value of greater than \$1,000,000, the fee will be \$350 per Vendor Name Check review.

(B) **Confirmation of Vendex Compliance:** The Bidder shall submit this Confirmation of Vendex Compliance to the Department of Design and Construction, Contracts Section, 30-30 Thomson Avenue – First Floor, Long Island City, NY 11101.

Bid Information: The Bidder shall complete the bid information set forth below.

Name of Bidder: _____
Bidder's Address: _____
Bidder's Telephone Number: _____
Bidder's Fax Number: _____
Date of Bid Opening: _____
Project ID: _____

Vendex Compliance: To demonstrate compliance with Vendex requirements, the Bidder shall complete either Section (1) or Section (2) below, whichever applies.

(1) **Submission of Vendex Questionnaires to MOCS:** By signing in the space provided below, the Bidder certifies that as of the date specified below, the Bidder has submitted Vendex Questionnaires to the Mayor's Office of Contract Services, Attn: VENDEX, 253 Broadway, 9th Floor, New York, New York 10007.

Date of Submission: _____

By: _____
(Signature of Partner or corporate officer)

Print Name: _____

(2) **Submission of Certification of No Change to DDC:** By signing in the space provided below, the Bidder certifies that it has read the instructions in a "Vendor's Guide to Vendex" and that such instructions do not require the Bidder to submit Vendex Questionnaires. The Bidder has completed **TWO ORIGINALS** of the Certification of No Change set forth on the next page of this Bid Booklet.

By: _____
(Signature of Partner or corporate officer)

Print Name: _____

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DIRECTIONS: Please execute two originals (both with original signature).
Please forward directly to the agency (not M.O.C.S.).



Certificate of No Change Form

- Please submit two completed forms. Copies will not be accepted.
- Please send both copies to the agency that requested it, unless you are advised to send it directly to the Mayor's Office of Contract Services (MOCS).
- A materially false statement willfully or fraudulently made in connection with this certification, and/or the failure to conduct appropriate due diligence in verifying the information that is the subject of this certification, may result in rendering the submitting entity non-responsible for the purpose of contract award.
- A materially false statement willfully or fraudulently made in connection with this certification may subject the person making the false statement to criminal charges

I, _____, being duly sworn, state that I have read
Enter Your Name

and understand all the items contained in the vendor questionnaire and any submission of change as identified on page one of this form and certify that as of this date, these items have not changed. I further certify that, to the best of my knowledge, information and belief, those answers are full, complete, and accurate; and that, to the best of my knowledge, information, and belief, those answers continue to be full, complete, and accurate.

In addition, I further certify on behalf of the submitting vendor that the information contained in the principal questionnaire(s) and any submission of change identified on page two of this form have not changed and have been verified and continue, to the best of my knowledge, to be full, complete and accurate.

I understand that the City of New York will rely on the information supplied in this certification as additional inducement to enter into a contract with the submitting entity.

Vendor Questionnaire *This section is required.*

This refers to the vendor questionnaire(s) submitted for the vendor doing business with the City.

Name of Submitting Entity: _____

Vendor's Address: _____

Vendor's EIN or TIN: _____ Requesting Agency: _____

Are you submitting this Certification as a parent? (Please circle one) Yes No

Signature date on the last full vendor questionnaire signed for the submitting vendor: _____

Signature date on change submission for the submitting vendor: _____



Principal Questionnaire

This section refers to the most recent principal questionnaire submissions.

Principal Name	Date of signature on last full Principal Questionnaire	Date(s) of signature on submission of change
1		
2		
3		
4		
5		
6		

Check if additional changes were submitted and attach a document with the date of additional submissions.

Certification *This section is required.*

This form must be signed and notarized. Please complete this twice. Copies will not be accepted.

Certified By:

Name (Print)

Title

Name of Submitting Entity

Signature

Date

Notarized By:

Notary Public

County License Issued

License Number

Sworn to before me on: _____
Date

DIRECTIONS: Please execute two originals (both with original signature).
Please forward directly to the agency (not M.O.C.S.).



Certificate of No Change Form

- Please submit two completed forms. Copies will not be accepted.
- Please send both copies to the agency that requested it, unless you are advised to send it directly to the Mayor's Office of Contract Services (MOCS).
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- A materially false statement willfully or fraudulently made in connection with this certification may subject the person making the false statement to criminal charges

I, _____, being duly sworn, state that I have read
Enter Your Name

and understand all the items contained in the vendor questionnaire and any submission of change as identified on page one of this form and certify that as of this date, these items have not changed. I further certify that, to the best of my knowledge, information and belief, those answers are full, complete, and accurate; and that, to the best of my knowledge, information, and belief, those answers continue to be full, complete, and accurate.

In addition, I further certify on behalf of the submitting vendor that the information contained in the principal questionnaire(s) and any submission of change identified on page two of this form have not changed and have been verified and continue, to the best of my knowledge, to be full, complete and accurate.

I understand that the City of New York will rely on the information supplied in this certification as additional inducement to enter into a contract with the submitting entity.

Vendor Questionnaire *This section is required.*

This refers to the vendor questionnaire(s) submitted for the vendor doing business with the City.

Name of Submitting Entity: _____

Vendor's Address: _____

Vendor's EIN or TIN: _____ Requesting Agency: _____

Are you submitting this Certification as a parent? (Please circle one) Yes No

Signature date on the last full vendor questionnaire signed for the submitting vendor: _____

Signature date on change submission for the submitting vendor: _____

Principal Questionnaire

This section refers to the most recent principal questionnaire submissions.



Principal Name	Date of signature on last full Principal Questionnaire	Date(s) of signature on submission of change
1		
2		
3		
4		
5		
6		

Check if additional changes were submitted and attach a document with the date of additional submissions.

Certification *This section is required.*

This form must be signed and notarized. Please complete this twice. Copies will not be accepted.

Certified By:

Name (Print)

Title

Name of Submitting Entity

Signature

Date

Notarized By:

Notary Public

County License Issued

License Number

Sworn to before me on: _____
Date

**IRAN DIVESTMENT ACT COMPLIANCE RIDER
FOR NEW YORK CITY CONTRACTORS**

The Iran Divestment Act of 2012, effective as of April 12, 2012, is codified at State Finance Law ("SFL") §165-a and General Municipal Law ("GML") §103-g. The Iran Divestment Act, with certain exceptions, prohibits municipalities, including the City, from entering into contracts with persons engaged in investment activities in the energy sector of Iran. Pursuant to the terms set forth in SFL §165-a and GML §103-g, a person engages in investment activities in the energy sector of Iran if:

- (a) The person provides goods or services of twenty million dollars or more in the energy sector of Iran, including a person that provides oil or liquefied natural gas tankers, or products used to construct or maintain pipelines used to transport oil or liquefied natural gas, for the energy sector of Iran; or
- (b) The person is a financial institution that extends twenty million dollars or more in credit to another person, for forty-five days or more, if that person will use the credit to provide goods or services in the energy sector in Iran and is identified on a list created pursuant to paragraph (b) of subdivision three of Section 165-a of the State Finance Law and maintained by the Commissioner of the Office of General Services.

A bid or proposal shall not be considered for award nor shall any award be made where the bidder or proposer fails to submit a signed and verified bidder's certification.

Each bidder or proposer must certify that it is not on the list of entities engaged in investment activities in Iran created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the State Finance Law. In any case where the bidder or proposer cannot certify that they are not on such list, the bidder or proposer shall so state and shall furnish with the bid or proposal a signed statement which sets forth in detail the reasons why such statement cannot be made. The City of New York may award a bid to a bidder who cannot make the certification on a case by case basis if:

- (1) The investment activities in Iran were made before the effective date of this section (i.e., April 12, 2012), the investment activities in Iran have not been expanded or renewed after the effective date of this section and the person has adopted, publicized and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or
- (2) The City makes a determination that the goods or services are necessary for the City to perform its functions and that, absent such an exemption, the City would be unable to obtain the goods or services for which the contract is offered. Such determination shall be made in writing and shall be a public document.

**BIDDER'S CERTIFICATION OF COMPLIANCE WITH
IRAN DIVESTMENT ACT**

Pursuant to General Municipal Law §103-g, which generally prohibits the City from entering into contracts with persons engaged in investment activities in the energy sector of Iran, the bidder/proposer submits the following certification:

[Please Check One]

BIDDER'S CERTIFICATION

By submission of this bid or proposal, each bidder/proposer and each person signing on behalf of any bidder/proposer certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief, that each bidder/proposer is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the State Finance Law.

I am unable to certify that my name and the name of the bidder/proposer does not appear on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the State Finance Law. I have attached a signed statement setting forth in detail why I cannot so certify.

Dated: _____, New York
_____, 20__

SIGNATURE

PRINTED NAME

TITLE

Sworn to before me this
____ day of _____, 20__

Notary Public

Dated:

CITY OF NEW YORK

DIVISION OF LABOR SERVICES

CONSTRUCTION EMPLOYMENT REPORT

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The City of New York Department of Small Business Services
Division of Labor Services Contract Compliance Unit
110 William Street, New York, New York 10038
Phone: (212) 513 - 6323
Fax: (212) 618-8879

CONSTRUCTION EMPLOYMENT REPORT

GENERAL INFORMATION

1. Your contractual relationship in this contract is: Prime contractor ___ Subcontractor ___
- 1a. Are MWBE goals attached to this project? Yes ___ No ___
2. Please check one of the following if your firm would like information on how to certify with the City of New York as a:

___ Minority Owned Business Enterprise	___ Locally Based Business Enterprise
___ Women Owned Business Enterprise	___ Emerging Business Enterprise
___ Disadvantaged Business Enterprise	
- 2a. If you are certified as an **MBE, WBE, LBE, EBE** or **DBE**, what city/state agency are you certified with? _____ Are you DBE certified? Yes ___ No ___
3. Please indicate if you would like assistance from SBS in identifying certified MWBEs for contracting opportunities: Yes ___ No ___
4. Is this project subject to a project labor agreement? Yes ___ No ___
5. Are you a Union contractor? Yes ___ No ___ If yes, please list which local(s) you affiliated with _____
6. Are you a Veteran owned company? Yes ___ No ___

PART I: CONTRACTOR/SUBCONTRACTOR INFORMATION

7. _____
Employer Identification Number or Federal Tax I.D. Email Address
8. _____
Company Name
9. _____
Company Address and Zip Code
10. _____
Chief Operating Officer Telephone Number
11. _____
Designated Equal Opportunity Compliance Officer Telephone Number
(If same as Item #10, write "same")
12. _____
Name of Prime Contractor and Contact Person
(If same as Item #8, write "same")

13. Number of employees in your company: _____

14. Contract information:

(a) _____
Contracting Agency (City Agency)

(b) _____
Contract Amount

(c) _____
Procurement Identification Number (PIN)

(d) _____
Contract Registration Number (CT#)

(e) _____
Projected Commencement Date

(f) _____
Projected Completion Date

(g) Description and location of proposed contract:

15. Has your firm been reviewed by the Division of Labor Services (DLS) within the past 36 months and issued a Certificate of Approval? Yes___ No___

If yes, attach a copy of certificate.

16. Has DLS within the past month reviewed an Employment Report submission for your company and issued a Conditional Certificate of Approval? Yes___ No___

If yes, attach a copy of certificate.

NOTE: DLS WILL NOT ISSUE A CONTINUED CERTIFICATE OF APPROVAL IN CONNECTION WITH THIS CONTRACT UNLESS THE REQUIRED CORRECTIVE ACTIONS IN PRIOR CONDITIONAL CERTIFICATES OF APPROVAL HAVE BEEN TAKEN.

17. Has an Employment Report already been submitted for a different contract (not covered by this Employment Report) for which you have not yet received compliance certificate?
Yes___ No___ If yes,

Date submitted: _____

Agency to which submitted: _____

Name of Agency Person: _____

Contract No: _____

Telephone: _____

18. Has your company in the past 36 months been audited by the United States Department of Labor, Office of Federal Contract Compliance Programs (OFCCP)? Yes___ No___

If yes,

(a) Name and address of OFCCP office.

(b) Was a Certificate of Equal Employment Compliance issued within the past 36 months?
Yes___ No___

If yes, attach a copy of such certificate.

(c) Were any corrective actions required or agreed to? Yes___ No___

If yes, attach a copy of such requirements or agreements.

(d) Were any deficiencies found? Yes___ No___

If yes, attach a copy of such findings.

19. Is your company or its affiliates a member or members of an employers' trade association which is responsible for negotiating collective bargaining agreements (CBA) which affect construction site hiring? Yes___ No___

If yes, attach a list of such associations and all applicable CBA's.

PART II: DOCUMENTS REQUIRED

20. For the following policies or practices, attach the relevant documents (e.g., printed booklets, brochures, manuals, memoranda, etc.). If the policy(ies) are unwritten, attach a full explanation of the practices. See instructions.

- ___ (a) Health benefit coverage/description(s) for all management, nonunion and union employees (whether company or union administered)
- ___ (b) Disability, life, other insurance coverage/description
- ___ (c) Employee Policy/Handbook
- ___ (d) Personnel Policy/Manual
- ___ (e) Supervisor's Policy/Manual
- ___ (f) Pension plan or 401k coverage/description for all management, nonunion and union employees, whether company or union administered
- ___ (g) Collective bargaining agreement(s).
- ___ (h) Employment Application(s)
- ___ (i) Employee evaluation policy/form(s).
- ___ (j) Does your firm have medical and/or non-medical (i.e. education, military, personal, pregnancy, child care) leave policy?

21. To comply with the Immigration Reform and Control Act of 1986 when and of whom does your firm require the completion of an I-9 Form?

- (a) Prior to job offer Yes___ No___
- (b) After a conditional job offer Yes___ No___
- (c) After a job offer Yes___ No___
- (d) Within the first three days on the job Yes___ No___
- (e) To some applicants Yes___ No___
- (f) To all applicants Yes___ No___
- (g) To some employees Yes___ No___
- (h) To all employees Yes___ No___

22. Explain where and how completed I-9 Forms, with their supportive documentation, are maintained and made accessible.

23. Does your firm or any of its collective bargaining agreements require job applicants to take a medical examination? Yes___ No___

If yes, is the medical examination given:

- (a) Prior to a job offer Yes___ No___
- (b) After a conditional job offer Yes___ No___
- (c) After a job offer Yes___ No___
- (d) To all applicants Yes___ No___
- (e) Only to some applicants Yes___ No___

If yes, list for which applicants below and attach copies of all medical examination or questionnaire forms and instructions utilized for these examinations.

24. Do you have a written equal employment opportunity (EEO) policy? Yes___ No___

If yes, list the document(s) and page number(s) where these written policies are located.

25. Does the company have a current affirmative action plan(s) (AAP)

- ___ Minorities and Women
- ___ Individuals with handicaps
- ___ Other. Please specify _____

26. Does your firm or collective bargaining agreement(s) have an internal grievance procedure with respect to EEO complaints? Yes___ No___

If yes, please attach a copy of this policy.

If no, attach a report detailing your firm's unwritten procedure for handling EEO complaints.

27. Has any employee, within the past three years, filed a complaint pursuant to an internal grievance procedure or with any official of your firm with respect to equal employment opportunity? Yes___ No___

If yes, attach an internal complaint log. See instructions.

28. Has your firm, within the past three years, been named as a defendant (or respondent) in any administrative or judicial action where the complainant (plaintiff) alleged violation of any anti-discrimination or affirmative action laws? Yes___ No___

If yes, attach a log. See instructions.

29. Are there any jobs for which there are physical qualifications? Yes___ No___

If yes, list the job(s), submit a job description and state the reason(s) for the qualification(s).

30. Are there any jobs for which there are age, race, color, national origin, sex, creed, disability, marital status, sexual orientation, or citizenship qualifications? Yes___ No___

If yes, list the job(s), submit a job description and state the reason(s) for the qualification(s).

SIGNATURE PAGE

I, (print name of authorized official signing) _____ hereby certify that the information submitted herewith is true and complete to the best of my knowledge and belief and submitted with the understanding that compliance with New York City's equal employment requirements, as contained in Chapter 56 of the City Charter, Executive Order No. 50 (1980), as amended, and the implementing Rules and Regulations, is a contractual obligation. I also agree on behalf of the company to submit a certified copy of payroll records to the Division of Labor Services on a monthly basis.

Contractor's Name

Name of person who prepared this Employment Report Title

Name of official authorized to sign on behalf of the contractor Title

Telephone Number

Signature of authorized official Date

If contractors are found to be underutilizing minorities and females in any given trade based on Chapter 56 Section 3H, the Division of Labor Services reserves the right to request the contractor's workforce data and to implement an employment program.

Contractors who fail to comply with the above mentioned requirements or are found to be in noncompliance may be subject to the withholding of final payment.

Willful or fraudulent falsifications of any data or information submitted herewith may result in the termination of the contract between the City and the bidder or contractor and in disapproval of future contracts for a period of up to five years. Further, such falsification may result in civil and/or criminal prosecution.

To the extent permitted by law and consistent with the proper discharge of DLS' responsibilities under Charter Chapter 56 of the City Charter and Executive Order No. 50 (1980) and the implementing Rules and Regulations, all information provided by a contractor to DLS shall be confidential.

Only original signatures accepted.

Sworn to before me this _____ day of _____ 20 _____

Notary Public

Authorized Signature

Date

FORM A. CONTRACT BID INFORMATION: USE OF SUBCONTRACTORS/TRADES

1. Do you plan to subcontractor work on this contract? Yes ___ No ___
2. If yes, complete the chart below.

NOTE: All proposed subcontractors with a subcontract in excess of \$750,000 must complete an Employment Report for review and approval before the contract may be awarded and work commences.

SUBCONTRACTOR'S NAME*	OWNERSHIP (ENTER APPROPRIATE CODE LETTERS BELOW)	WORK TO BE PERFORMED BY SUBCONTRACTOR	TRADE PROJECTED FOR USE BY SUBCONTRACTOR	PROJECTED DOLLAR VALUE OF SUBCONTRACT

*If subcontractor is presently unknown, please enter the trade (craft name).

- OWNERSHIP CODES**
W: White
B: Black
H: Hispanic
A: Asian
N: Native American
F: Female

FORM B: PROJECTED WORKFORCE

TRADE CLASSIFICATION CODES

- (J) Journeylevel Workers
- (H) Helper
- (A) Apprentice
- (TRN) Trainee
- (TOT) Total by Column

For each trade to be engaged by your company for this project, enter the projected workforce for Males and Females by trade classification on the charts below.

MALES

FEMALES

Trade:	MALES				FEMALES					
	(1) White Non Hisp.	(2) Black Non Hisp.	(3) Hisp.	(4) Asian	(5) Native Amer.	(6) White Non Hisp.	(7) Black Non Hisp.	(8) Hisp.	(9) Asian	(10) Native Amer.
J										
H										
A										
TRN										
TOT										

Union Affiliation, if applicable _____

Total (Col. #1-10): _____

Total Minority, Male & Female (Col. #2,3,4,5,7,8,9, & 10): _____

Total Female (Col. #6 - 10): _____

What are the recruitment sources for you projected hires (i.e., unions, government employment office, job tap center, community outreach)?

FORM B: PROJECTED WORKFORCE

Trade: _____

Union Affiliation, if applicable _____

Total (Col. #1-10): _____

Total Minority, Male & Female
(Col. #2,3,4,5,7,8,9, & 10): _____

Total Female
(Col. #6 - 10): _____

MALES

	(1)		(2)		(3)		(4)		(5)	
	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.
J										
H										
A										
TRN										
TOT										

FEMALES

	(6)		(7)		(8)		(9)		(10)	
	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.
J										
H										
A										
TRN										
TOT										

What are the recruitment sources for you projected hires (i.e., unions, government employment office, job tap center, community outreach)?

FORM C: CURRENT WORKFORCE

TRADE CLASSIFICATION CODES

- (J) Journeylevel Workers
- (H) Helper
- (A) Apprentice
- (TRN) Trainee
- (TOT) Total by Column

For each trade currently engaged by your company for all work performed in New York City, enter the current workforce for Males and Females by trade classification on the charts below.

MALES

FEMALES

Trade:	MALES					FEMALES				
	(1) White Non Hisp.	(2) Black Non Hisp.	(3) Hisp.	(4) Asian	(5) Native Amer.	(6) White Non Hisp.	(7) Black Non Hisp.	(8) Hisp.	(9) Asian	(10) Native Amer.
J										
H										
A										
TRN										
TOT										

Total (Col. #1-10): _____

Total Minority, Male & Female
(Col. #2,3,4,5,7,8,9, & 10): _____

Total Female
(Col. #6 - 10): _____

What are the recruitment sources for you projected hires (i.e., unions, government employment office, job tap center, community outreach)?

FORM C: CURRENT WORKFORCE

Trade: _____

Union Affiliation, if applicable _____

Total (Col. #1-10): _____

Total Minority, Male & Female
(Col. #2,3,4,5,7,8,9, & 10): _____

Total Female
(Col. #6 - 10): _____

MALES

	(1)		(2)		(3)		(4)		(5)	
	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	Hisp.	Hisp.	Asian	Asian	Native Amer.	Native Amer.
J										
H										
A										
TRN										
TOT										

FEMALES

	(6)		(7)		(8)		(9)		(10)	
	White Non Hisp.	Black Non Hisp.	White Non Hisp.	Black Non Hisp.	Hisp.	Hisp.	Asian	Asian	Native Amer.	Native Amer.
J										
H										
A										
TRN										
TOT										

What are the recruitment sources for you projected hires (i.e., unions, government employment office, job tap center, community outreach)?



FMS ID: PV181HSA2



**THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS**

30-30 THOMSON AVENUE LONG ISLAND CITY, NEW YORK 11101-3045
TELEPHONE (718) 391-1000 WEBSITE www.nyc.gov/buildnyc

Contract for Furnishing all Labor and Material Necessary and Required for:

CONTRACT NO. 1 GENERAL CONSTRUCTION

Harlem School of the Arts, Phase II Building Renovations

LOCATION: 645 St. Nicholas Avenue
BOROUGH: Manhattan 10031
CITY OF NEW YORK

Contractor

Dated _____, 20____

Entered in the Comptroller's Office

First Assistant Bookkeeper

Dated _____, 20____





PROJECT ID: PV181HSA2

**THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS**

30-30 THOMSON AVENUE
LONG ISLAND CITY, NEW YORK 11101-3045
TELEPHONE (718) 391-1000
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VOLUME 2 OF 3

**INFORMATION FOR BIDDERS
CONTRACT
PERFORMANCE AND PAYMENT BONDS
SCHEDULE OF PREVAILING WAGES
GENERAL CONDITIONS**

FOR FURNISHING ALL LABOR AND MATERIALS
NECESSARY AND REQUIRED FOR THE PROJECT

**Harlem School of the Arts, Phase II
Building Renovations**

LOCATION: 645 St. Nicholas Avenue
BOROUGH: Manhattan 10031
CITY OF NEW YORK

CONTRACT NO. 1 GENERAL CONSTRUCTION

DCA

Greenman-Pedersen, Inc.

Date: May 27, 2015



15-188





NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

**THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS**

30-30 THOMSON AVENUE
LONG ISLAND CITY, NEW YORK 11101-3045
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NECESSARY AND REQUIRED FOR THE PROJECT





11/11/11

11/11/11

NOTICE TO BIDDERS

Please be advised that the City of New York has issued a new Standard Construction Contract. The new Contract, which is incorporated in this bid, is significantly different from the 2008 version previously used by the City. A listing of some of the significant changes is provided below. This notice is only a partial listing. Please refer to the Contract itself for a full understanding of the changes and the actual text of the changes that were made. The text of the revised Standard Construction Contract is the controlling document should there be any discrepancies between this notice and the Standard Construction Contract.

Significant changes include the following:

ARTICLE 11 DAMAGES CAUSED BY DELAYS

In 2008, the City embarked on a pilot project to test the use of new construction contract language altering the allocation of the risk of project delays, as between the City and the contractor. The City has determined to make the pilot project language the standard language for all City construction contracts. Accordingly, there is now one Standard City Construction Contract that it to be used by all agencies for all bids released after the release of the new contract. The damages for delay language is Article 11. Please note that changes have been made to the damages for delay provisions from the pilot to the adopted version.

ARTICLE 22 INSURANCE

Changes have been made to the insurance provisions, including incorporating requirements that the insurance provided comply with recent NYC Department of Buildings regulations specifying required dollar limits for CGL insurance for certain projects and requiring proof of builder's risk insurance prior to Work commencing rather than within 10 days of award.

ARTICLE 26 EXTRA WORK

The percentage paid for overhead for Extra Work pursuant to Section 26.1.11 is increased from 10% to 12% and the calculation of Worker's Compensation insurance costs reimbursed for Extra Work has been clarified.

ARTICLE 37 LABOR LAW REQUIREMENTS

ARTICLE 38 PAYROLL REPORTS

The provisions governing Labor Law provisions have been tightened, including requirements the employee identification cards include a photo (unless the requirement is waived), a prohibition on cash payments to employees and subcontractors, and clear enforcement authority requirements.

ARTICLE 70 ELECTRONIC FILING

A provision is added to make mandatory the electronic filing of certain alteration permits with the Department of Buildings.

Other significant changes include the following:

ARTICLE 7 INDEMNIFICATION

Changes have been made to the indemnification provisions.

ARTICLE 14 FINAL ACCEPTANCE OF WORK

ARTICLE 44 SUBSTANTIAL COMPLETION PAYMENT

The Commissioner is no longer required to issue a substantial completion determination in addition to the already existing requirement that the Engineer issue a substantial completion determination and reach an agreement on a punch list of remaining work. Now, the Engineer, when issuing the punch list to the Contractor, must also include a proposed schedule for the completion of the punch list. The Contractor may propose an alternative schedule that is subject to the approval of the Engineer. If the Contractor fails to respond to the Engineer's proposed schedule, the Engineer's schedule is deemed accepted.

ARTICLE 15 LIQUIDATED DAMAGES

The contract is revised to match Schedule A to provide that liquidated damages are available only until substantial completion.

ARTICLE 17 SUBCONTRACTS

The requirements for prior approval of subcontractors, and for contractors to be responsible for the actions of their subcontractors, have been tightened. The requirement that the Contractor list subcontractors in the City's Payee Information Portal has been added; the provision was previously attached as a rider.

ARTICLE 19 SECURITY DEPOSIT

The provisions governing the return of bid deposits are clarified.

ARTICLE 20 PAYMENT GUARANTEE

The Payment Guaranty provisions, which apply when the City does not require the Contractor to obtain payment bonds, has been significantly revised to track the requirements of State Finance law 137.

ARTICLE 28 RECORDKEEPING FOR EXTRA OR DISPUTED WORK

The recordkeeping requirement that currently apply to payments for Time & Materials for extra work are expressly made applicable to regular work that is paid for on a T & M basis.

ARTICLE 35 EMPLOYEES

The whistleblower provisions of local law are added to the construction contract. They previously have been attached as a rider.

**ARTICLE 38 PAYROLL REPORTS
ARTICLE 77 RECORDS RETENTION**

Requirements that records be maintained for six years and directions on how such records must be made available.

ARTICLE 42 PARTIAL PAYMENTS

Increased flexibility has been provided for when contractors may submit invoices.

ARTICLE 62 TAX EXEMPTION

The provisions identifying the State tax exemption for municipalities are revised to more clearly describe State law.

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CITY OF NEW YORK
DEPARTMENT OF
DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

INFORMATION FOR BIDDERS

December 2013

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INFORMATION FOR BIDDERS

1. Description and Location of Work

The description and location of the work for which bids are requested are specified in Attachment 1, "Bid Information". Attachment 1 is included in the Bid Booklet.

2. Time and Place for Receipt of Bids

Sealed bids shall be received on or before the date and hour specified in Attachment 1, at which time they will be publicly opened and read aloud in the presence of the Commissioner or his or her representative, and any bidders who may desire to be present.

3. Definitions

The definitions set forth in the Procurement Policy Board Rules shall apply to this Invitation For Bids.

4. Invitation For Bids and Contract Documents

(A) Except for titles, sub-titles, headings, running headlines, tables of contents and indices (all of which are printed herein merely for convenience) the following, except for such portions thereof as may be specifically excluded, shall be deemed to be part of the Contract and the Invitation for Bids.

- (1) All provisions required by law to be inserted in this Contract, whether actually inserted or not
- (2) The Contract Drawings and Specifications
- (3) The General Conditions, the General Requirements and the Special Conditions, if any
- (4) The Contract
- (5) The Information for Bidders; Request for Proposals; Notice of Solicitation and Proposal For Bids; Bid or Proposal, and, if used, the Bid Booklet
- (6) The Budget Director's Certificate; all Addenda issued prior to the receipt of the bids; the Notice of Award; Performance and Payment Bonds, if required; and the Notice to Proceed with the Work.

(B) For particulars as to this procurement, including quantity and quality of the purchase, extent of the work or labor to be performed, delivery and performance schedule, and any other special instructions, prospective bidders are referred to the Invitation For Bids Documents. A copy of such documents can be obtained at the location set forth in Attachment 1.

(C) Deposit for Copy of Invitation For Bids Documents: Prospective bidders may obtain a copy of the Invitation For Bids Documents by complying with the conditions set forth in the Notice of Solicitation. The deposit must be in the form of a check or money order made payable to the City of New York, and drawn upon a state or national bank or trust company, or a check of such bank or trust company signed by a duly authorized officer thereof.

(D) Return of Invitation For Bids Documents: All Invitation For Bids Documents must be returned to the Department upon request. If the bidder elects not to submit a bid thereunder, the Invitation For Bids Documents shall be returned to the Department, along with a statement that no bid will be submitted.

(E) Return of Deposit: Such deposit will be returned within 30 days after the award of the contract or the rejection of all bids as set forth in the advertisement, provided the Invitation For Bids Documents are returned to the location specified in Attachment 1, in physical condition satisfactory to the Commissioner.

(F) Additional Copies: Additional copies of the Invitation For Bids Documents may be obtained, subject to the conditions set forth in the advertisement for bids.

5. Pre-Bid Conference

A pre-bid conference shall be held as set forth in Attachment 1. Nothing stated at the pre-bid conference shall change the terms or conditions of the Invitation For Bids Documents, unless a change is made by written amendment as provided in Section 9 below. Failure to attend a mandatory pre-bid conference shall constitute grounds for the rejection of the bid.

6. Agency Contact

Any questions or correspondence relating to this bid solicitation shall be addressed to the Agency Contact person specified in Attachment 1.

7. Bidder's Oath

(A) The bid shall be properly signed by an authorized representative of the bidder and the bid shall be verified by the written oath of the authorized representative who signed the bid, that the several matters stated and information furnished therein are in all aspects true.

(B) A materially false statement willfully or fraudulently made in connection with the bid or any of the forms completed and submitted with the bid may result in the termination of any Contract between the City and the Bidder. As a result, the Bidder may be barred from participating in future City contracts as well as be subject to possible criminal prosecution.

8. Examination and Viewing of Site, Consideration of Other Sources of Information and Changed Conditions

(A) Pre-Bidding (Investigation) Viewing of Site - Bidders must carefully view and examine the site of the proposed work, as well as its adjacent area, and seek other usual sources of information, for they will be conclusively presumed to have full knowledge of any and all conditions on, about or above the site relating to or affecting in any way the performance of the work to be done under the Contract which were or should have been indicated to a reasonably prudent bidder. To arrange a date for visiting the work site, bidders are to contact the Agency Contact person specified in Attachment 1.

(B) Should the contractor encounter during the progress of the work subsurface conditions at the site materially differing from any shown on the Contract Drawings or indicated in the Specifications or such subsurface conditions as could not reasonably have been anticipated by the contractor and were not anticipated by the City, which conditions will materially affect the cost of the work to be done under the Contract, the attention of the Commissioner must be called immediately to such conditions before they are disturbed. The Commissioner shall thereupon promptly investigate the conditions. If he finds that they do so materially differ, or that they could not reasonably have been anticipated by the contractor and were not anticipated by the City, the Contract may be modified with his written approval.

9. Examination of Proposed Contract

(A) Request for Interpretation or Correction: Prospective bidders must examine the Contract Documents carefully and before bidding must request the Commissioner in writing for an interpretation or correction of every patent ambiguity, inconsistency or error therein which should have been discovered by a reasonably prudent bidder. Such interpretation or correction, as well as any additional contract provisions the Commissioner may decide to include, will be issued in writing by the Commissioner as an addendum to the Contract, which will be transmitted to each person recorded as having received a copy of the Contract Documents from the Department. Transmission of such addendum will be by mail, e-mail, facsimile or hand delivery. Such addendum will also be posted at the place where the Contract Documents are available for the inspection of prospective bidders. Upon transmission as provided for herein, such addendum shall become a part of the Contract Documents, and binding on all bidders, whether or not actual notice of such addendum is shown.

(B) Only Commissioner's Interpretation or Correction Binding: Only the written interpretation or correction so given by the Commissioner shall be binding, and prospective bidders are warned that no other officer, agent or employee of the City is authorized to give information concerning, or to explain or interpret, the Contract.

(C) Documents given to a subcontractor for the purpose of soliciting the subcontractor's bid shall include either a copy of the bid cover sheet or a separate information sheet setting forth the project name, the Contract number (if available), the contracting agency and the Project's location.

10. Form of Bid

Each bid must be submitted upon the prescribed form and must contain: a) the name, residence and place of business of the person or persons making the same; b) the names of all persons interested therein, and if no other person is so interested, such fact must be distinctly stated; c) a statement to the effect that it is made without any connection with any other person making a bid for the same purpose and that it is in all respects fair and without collusion or fraud; d) a statement that no Council member or other officer or employee or person whose salary is payable in whole or part from the City Treasury is directly or indirectly interested therein or in the supplies, materials or equipment and work or labor to which it relates, or in any portion of the profits thereof; e) a statement that the bidder is not in arrears to the City or to any agency upon a debt or contract or taxes, and is not a defaulter as surety or otherwise upon any obligation to the City to any agency thereof, except as set forth in the bid.

THE BID SHALL BE TYPEWRITTEN OR WRITTEN LEGIBLY IN INK. THE BID SHALL BE SIGNED IN INK. ERASURES OR ALTERATIONS SHALL BE INITIALED BY THE SIGNER IN INK. FAILURE TO CONFORM TO THE REQUIREMENTS OF THIS SECTION 10 SHALL RESULT IN THE REJECTION OF THE BID.

11. Irrevocability of Bid

The prices set forth in the bid cannot be revoked and shall be effective until the award of the Contract, unless the bid is withdrawn as provided for in Sections 15 and 18 below.

12. Acknowledgment of Amendments

The receipt of any amendment to the Contract Documents shall be acknowledged by the bidder in its bid submission.

13. Bid Samples and Descriptive Literature

Bid samples and descriptive literature shall not be submitted by the bidder, unless expressly requested elsewhere in the Contract or Contract Documents. Any unsolicited bid samples or descriptive literature which are submitted shall not be examined or tested and shall not be deemed to vary any of the provisions of this Contract.

14. Proprietary Information/Trade Secrets

(A) The bidder shall identify those portions of the bid which it deems to be confidential, proprietary information or trade secrets, and provide justification why such materials shall not be disclosed by the City. All such materials shall be clearly indicated by stamping the pages on which such information appears, at the top and bottom thereof with the word "Confidential". Such materials stamped "Confidential" must be easily separable from the non-confidential sections of the bid.

(B) All such materials so indicated shall be reviewed by the Agency and any decision not to honor a request for confidentiality shall be communicated in writing to the bidder. For those bids which are unsuccessful, all such confidential materials shall be returned to the bidder. Prices, makes and model or catalog numbers of the items offered, deliveries, and terms of payment shall be publicly available after bid opening, regardless of any designation of confidentiality made by the bidder.

15. Pre-Opening Modification or Withdrawal of Bids

Bids may be modified or withdrawn by written notice received in the office designated in Attachment 1, before the time and date set for the bid opening. If a bid is withdrawn in accordance with this Section, the bid security, if any, shall be returned to the bidder.

16. Bid Evaluation and Award

In accordance with the New York City Charter, the Procurement Policy Board Rules and the terms and conditions of this Invitation For Bids, this Contract shall be awarded, if at all, to the responsible bidder whose bid meets the requirements and evaluation criteria set forth in the Invitation For Bids, and whose bid price is either the most favorable bid price or, if the Invitation For Bids so states, the most favorable evaluated bid price. A bid may not be evaluated for any requirement or criterion that is not disclosed in the Invitation For Bids.

Restriction: No negotiations with any bidder shall be allowed to take place except under the circumstances and in the manner set forth in Section 21. Nothing in this Section shall be deemed to permit a contract award to a bidder submitting a higher quality item than that designated in the Invitation For Bids, if that bid is not also the most favorable bid.

17. Late Bids, Late Withdrawals and Late Modifications

Any bid received at the place designated in the solicitation after the time and date set for receipt of bids is late and shall not be considered. Any request for withdrawal or modification received at the place designated in the solicitation after the time and date set for receipt of bids is late and shall not be considered. The exception to this provision is that a late modification of a successful bid that makes the bid terms more favorable to the City shall be considered at any time it is received.

18. Withdrawal of Bids.

Except as provided for in Section 15, above, a bidder may not withdraw its bid before the expiration of forty-five (45) days after the date of the opening of bids; thereafter, a bidder may withdraw its bid only in writing and in advance of an actual award. If within sixty (60) days after the execution of the Contract, the Commissioner fails to fix the date for commencement of work by written notice to the bidder, the bidder, at his option, may ask to be relieved of his obligation to perform the work called for by written notice to the Commissioner. If such notice is given to the Commissioner, and the request to withdraw is granted, the bidder waives all claims in connection with this Contract.

19. Mistake in Bids

(A) Mistake Discovered Before Bid Opening: A bidder may correct mistakes discovered before the time and date set for bid opening by withdrawing or correcting the bid as provided in Section 15 above.

(B) Mistakes Discovered Before Award

(1) In accordance with General Municipal Law (Section 103, subdivision 11), where a unilateral error or mistake is discovered in a bid, such bid may be withdrawn upon written approval of the Agency Chief Contracting Officer if the following conditions are met:

- (a) The mistake is known or made known to the agency prior to the awarding of the Contract or within 3 days after the opening of the bid, whichever period is shorter; and
- (b) The price bid was based upon an error of such magnitude that enforcement would be unconscionable; and

- (c) The bid was submitted in good faith and the bidder submits credible evidence that the mistake was a clerical error as opposed to a judgment error; and
- (d) The error in the bid is actually due to an unintentional and substantial arithmetic error or an unintentional omission of a substantial quantity of work, labor, material or services made directly in the compilation of the bid, which unintentional arithmetic error or unintentional omission can be clearly shown by objective evidence drawn from inspection of the original work paper, documents, or materials used in the preparation of the bid sought to be withdrawn; and
- (e) It is possible to place the agency in the same position as existed prior to the bid.

(2) Unless otherwise required by law, the sole remedy for a bid mistake in accordance with this Article shall be withdrawal of the bid, and the return of the bid bond or other security, if any, to the bidder. Thereafter, the agency may, in its discretion, award the Contract to the next lowest bidder or rebid the Contract. Any amendment to or reformation of a bid or a Contract to rectify such an error or mistake therein is strictly prohibited.

(3) If the mistake and the intended correct bid are clearly evident on the face of the bid document, the bid shall be corrected to the intended correct bid and may not be withdrawn. Examples of mistakes that may be corrected are typographical errors, errors in extending unit prices, transposition errors and arithmetical errors.

20. Low Tie Bids

(A) When two or more low responsive bids from responsible bidders are identical in price, meeting all the requirements and criteria set forth in the Invitation For Bids, the Agency Chief Contracting Officer will break the tie in the following manner and order of priority:

- (1) Award to a certified New York City small, minority or woman-owned business entity bidder;
- (2) Award to a New York City bidder;
- (3) Award to a certified New York State small, minority or woman-owned business bidder;
- (4) Award to a New York State bidder.

(B) If two or more bidders still remain equally eligible after application of paragraph (A) above, award shall be made by a drawing by lot limited to those bidders. The bidders involved shall be invited to attend the drawing. A witness shall be present to verify the drawing and shall certify the results on the bid tabulation sheet.

21. Rejection of Bids

(A) Rejection of Individual Bids: The Agency may reject a bid if:

- (1) The bidder fails to furnish any of the information required pursuant to Section 24 or 28 hereof; or if
- (2) The bidder is determined to be not responsible pursuant to the Procurement Policy Board Rules; or if
- (3) The bid is determined to be non-responsive pursuant to the Procurement Policy Board Rules; or if
- (4) The bid, in the opinion of the Agency Chief Contracting Officer, contains unbalanced bid prices and is thus non-responsive, unless the bidder can show that the prices are not unbalanced for the probable required quantity of items, or if the imbalance is corrected pursuant to Section 15.

(B) Rejection of All Bids: The Agency, upon written approval by the Agency Chief Contracting Officer, may reject all bids and may elect to resolicit bids if in its sole opinion it shall deem it in the best interest of the City so to do.

(C) Rejection of All Bids and Negotiation With All Responsible Bidders: The Agency Head may determine that it is appropriate to cancel the Invitation For Bids after bid opening and before award and to complete the acquisition by negotiation. This determination shall be based on one of the following reasons:

- (1) All otherwise acceptable bids received are at unreasonable prices, or only one bid is received and the Agency Chief Contracting Officer cannot determine the reasonableness of the bid price, or no responsive bid has been received from a responsible bidder; or
- (2) In the judgment of the Agency Chief Contracting Officer, the bids were not independently arrived at in open competition, were collusive, or were submitted in bad faith.

(D) When the Agency has determined that the Invitation for Bids is to be canceled and that use of negotiation is appropriate to complete the acquisition, the contracting officer may negotiate and award the Contract without issuing a new solicitation, subject to the following conditions:

- (1) prior notice of the intention to negotiate and a reasonable opportunity to negotiate have been given by the contracting officer to each responsible bidder that submitted a bid in response to the Invitation for Bids;
- (2) the negotiated price is the lowest negotiated price offered by a responsible bidder; and
- (3) the negotiated price is lower than the lowest rejected bid price of a responsible bidder that submitted a bid in response to the Invitation for Bids.

22. Right to Appeal Determinations of Non-Responsiveness or Non-Responsibility and Right to Protest Solicitations and Award

The bidder has the right to appeal a determination of non-responsiveness or non-responsibility and has the right to protest a solicitation and award. For further information concerning these rights, the bidder is directed to the Procurement Policy Board Rules.

23. Affirmative Action and Equal Employment Opportunity

This Invitation For Bids is subject to applicable provisions of Federal, State and Local Laws and executive orders requiring affirmative action and equal employment opportunity.

24. VENDEX Questionnaires

(A) Requirement: Pursuant to Administrative Code Section 6-116.2 and the PPB Rules, bidders may be obligated to complete and submit VENDEX Questionnaires. Generally, if this bid is \$100,000 or more, or if this bid when added to the sum total of all contracts, concessions and franchises the bidder has received from the City and any subcontracts received from City contractors over the past twelve months, equals or exceeds \$100,000, Vendex Questionnaires must be completed. If required, Vendex Questionnaires must be completed and submitted before any award of contract may be made or before approval is given for a proposed subcontractor. Non-compliance with these submission requirements may result in the disqualification of the bid, disapproval of a subcontractor, subsequent withdrawal of approval for the use of an approved subcontractor, or the cancellation of the contract after its award.

(B) Submission: Vendex Questionnaires must be submitted directly to the Mayor's Office of Contract Services, ATTN: Vendex, 253 Broadway, 9th Floor, New York, New York 10007. In addition, the bidder must submit a Confirmation of Vendex Compliance to the agency. A form for this confirmation is set forth in the Bid Booklet.

(C) Obtaining Forms: Vendex Questionnaires, as well as detailed instructions, may be obtained at www.nyc.gov/vendex. The bidder may also obtain Vendex forms and instructions by contacting the Agency Chief Contracting Officer or the contact person for this contract.

25. Complaints About the Bid Process

The New York City Comptroller is charged with the audit of contracts in New York City. Any vendor who believes that there has been unfairness, favoritism or impropriety in the bid process should inform the Comptroller, Office of Contract Administration, One Centre Street, Room 835, New York, New York; telephone number (212)669-2797.

26. Bid, Performance and Payment Security

(A) Bid Security: Each bid must be accompanied by bid security in an amount and type specified in Attachment 1. The bid security shall assure the City of New York of the adherence of the bidder to its proposal, the execution of the Contract, and the furnishing of Performance and Payment Bonds by the bidder, if required in Attachment 1. Bid security shall be returned to the bidder as follows:

- (1) Within ten (10) days after the bid opening, the Comptroller will be notified to return the deposits of all but the three (3) lowest bidders. Within five (5) days after the award, the Comptroller will be notified to return the deposits of the remaining two unsuccessful bidders.
- (2) Within five (5) days after the execution of the Contract and acceptance of the Contractor's bonds, the Comptroller will be notified to return the bid security of the successful bidder or, if performance and payment bonds are not required, only after the sum retained under Article 21 of the Contract equals the amount of the bid security.
- (3) Where all bids are rejected, the Comptroller will be notified to return the deposit of the three (3) lowest bidders at the time of rejection.

(B) Performance and Payment Security: Performance and Payment Security must be provided in an amount and type specified in Attachment 1. The performance and payment security shall be delivered by the contractor prior to or at the time of execution of the Contract. If a contractor fails to deliver the required performance and payment security, its bid security shall be enforced, and an award of Contract may be made to the next lowest responsible and responsive bidder, or the contract may be rebid.

(C) Acceptable Types of Security: Acceptable types of security for bids, performance, and payment shall be limited to the following:

- (1) a one-time bond in a form satisfactory to the City;
- (2) a bank certified check or money order;
- (3) obligations of the City of New York; or
- (4) other financial instruments as determined by the Office of Construction in consultation with the Comptroller.

Whenever the successful bidder deposits obligations of the City of New York as performance and payment security, the Comptroller may sell and use the proceeds thereof for any purpose for which the principal or surety on such bond would be liable under the terms of the Contract. If the money is deposited with the Comptroller, the successful bidder shall not be entitled to receive interest on such money from the City.

(D) Form of Bonds: Security provided in the form of bonds must be prepared on the form of bonds authorized by the City of New York. Forms for bid, performance, and payment bonds are included in the Invitation for Bids Documents. Such bonds must have as surety thereunder such surety company or companies as are: (1) approved by the City of New York; (2) authorized to do business in the State of New York, and (3) approved by the Department of the Treasury of the United States. Premiums for any required bonds must be included in the base bid.

The bidder is advised that submission of a bid bond where the surety on such bond fails to meet the criteria set forth herein, shall result in the rejection of the bid as non-responsive.

The Department of the Treasury of the United States advises that information concerning approved surety companies may be obtained as follows: (1) from the Government Printing Office at 202-512-1800; (2) through the Internet at <http://www.fms.treas.gov/c570/index.html>, and (3) through a computerized public bulletin board, which can be accessed by using your computer modem and dialing 202-874-6887.

(E) Power of Attorney: Attorneys in fact who sign bid, performance, or payment bonds must file with each bond a certified copy of their power of attorney to sign said bonds.

27. Failure to Execute Contract

In the event of failure of the successful bidder to execute the Contract and furnish the required security within ten (10) days after notice of the award of the Contract, the deposit of the successful bidder or so much thereof as shall be applicable to the amount of the award made shall be retained by the City, and the successful bidder shall be liable for and hereby agrees to pay on demand the difference between the price bid and the price for which such Contract shall be subsequently awarded, including the cost of any required reletting and less the amount of such deposit. No plea of mistake in such accepted bid shall be available to the bidder for the recovery of the deposit or as a defense to any action based upon such accepted bid. Further, should the bidder's failure to comply with this Section cause any funding agency, body or group (Federal, State, City, Public, Private, etc.) to terminate, cancel or reduce the funding on this project, the bidder in such event shall be liable also to the City for the amount of actual funding withdrawn by such agency on this project, less the amount of the forfeited deposit.

28. Bidder Responsibilities and Qualifications

(A) Bidders must include with their bids all information necessary for a determination of bidder responsibility, as set forth in the Specifications.

(B) The Agency may require any bidder or prospective bidder to furnish all books of account, records, vouchers, statements or other information concerning the bidder's financial status for examination as may be required by the Agency to ascertain the bidder's responsibility and capability to perform the Contract. If required, a bidder must also submit a sworn statement setting forth such information as the Agency may require concerning present and proposed plant and equipment, the personnel and qualifications of his working organizations, prior experience and performance record.

(C) Oral Examination on Qualifications: In addition thereto, and when directed by the Agency, the bidder, or a responsible officer, agent or employee of the bidder, must submit to an oral examination to be conducted by the Agency in relation to his proposed tentative plan and schedule of operations, and such other matters as the Agency may deem necessary in order to determine the bidder's ability and responsibility to perform the work in accordance with the Contract. Each person so examined must sign and verify a stenographic transcript of such examination noting thereon such corrections as such person may desire to make.

(D) If the bidder fails or refuses to supply any of the documents or information set forth in paragraph (B) hereof or fails to comply with any of the requirements thereof, the Agency may reject the bid.

29. Employment Report

In accordance with Executive Order No. 50 (1980) as modified by Executive Order 108 (1986), the filing of a completed Employment Report (ER) is a requirement of doing business with the City of New York for construction contractors with contracts of \$1,000,000 or more and subcontractors with construction subcontracts of \$750,000 or more. The required forms and information are included in the Bid Booklet.

30. Labor Law Requirements

(A) General: The successful bidder will be required to comply strictly with all Federal, State and local labor laws and regulations.

(B) New York State Labor Law: This Contract is subject to New York State Labor Law Section 220, which requires that construction workers on the site be paid prevailing wages and supplements. The Contractor is reminded that all wage provisions of this Contract will be enforced strictly and failure to comply will be considered when evaluating performance. Noncompliance may result in the contractor being debarred by the City from future contracts. Complaints filed with the Comptroller may result in decisions which may debar a contractor from bidding contracts with any state governmental entity and other political subdivisions.

(C) Records: The Contractor is expected to submit accurate payroll reports and other required documents and verify attendance and job classifications being utilized in compliance with the law, Contract provisions and agency procedures.

31. Insurance

(A) Bidders are advised that the insurance requirements contained herein are regarded as material terms of the Contract. As required by Article 22 of the Contract, the contractor must effect and maintain with companies licensed and authorized to do business in the State of New York, the types of insurance set forth therein, when required by and in the amounts set forth in Schedule A of the General Conditions. Such required insurance must be provided from the date the contractor is ordered to commence work and up to the date of final acceptance of all required work.

(B) The contractor must, within ten days of receipt of the notice of award, submit the following insurance documentation: (a) original certificate of insurance for general liability in the amount required by Schedule A of the General Conditions, and (b) original certificates of insurance or other proof of coverage for workers' compensation and disability benefits, as required by Section 57 of the New York State Workers' Compensation Law and Section 220 of the Disability Benefits Law.

32. Lump Sum Contracts

(A) Comparison of Bids: Bids on Lump Sum Contracts will be compared on the basis of the lump sum price bid, adjusted for alternate prices bid, if any.

(B) Lump Sum Bids for "General Construction Work" which include excavation shall include all necessary excavation work defined in the Specifications as being included in the lump sum bid. The bidder shall also bid a unit price for the additional cost of excavating material which is defined in the Specifications as excavation for which additional payment will be made. The total estimated additional cost of removing such material will be taken as the quantity set forth in the Engineer's Estimate multiplied by the unit price bid. This total estimated cost of additional excavation shall be added to the lump sum bid for the General Construction Work for the purpose of comparing bids to determine the low bidder.

(C) Variations from Engineer's Estimate: The Engineer's Estimate of the quantity of excavation for which additional payment will be made is approximate only and is given solely to be used as a uniform basis for the comparison of bids and such estimate is not to be considered as part of this contract. The quantities actually required to complete the contract work may be more or less than the quantities in the Engineer's Estimate and, if so, no action for damages or for loss of profits shall accrue to the contractor by reason thereof.

33. Unit Price Contracts

(A) Comparison of Bids: Bids on Unit Price Contracts will be compared on the basis of a total estimated price, arrived at by taking the sum of the estimated quantities of such items, in accordance with the Engineer's Estimate of Quantities set forth in the Bid Form, multiplied by the corresponding unit prices, and including any lump sum bids on individual items.

(B) Variations from Engineer's Estimate: Bidders are warned that the Engineer's Estimate of Quantities on the various items of work and materials is approximate only, given solely to be used as a uniform basis for the comparison of bids, and is not to be considered part of this contract. The quantities actually required to complete the contract work may be less or more than so estimated, and if so, no action for damages or for loss of profits shall accrue to the contractor by reason thereof.

(C) Overruns: The terms and conditions applicable to overruns of unit price items are set forth in Article 26 of the Contract.

34. Excise Tax

Bidders are referred to the Specifications for information on Federal Excise Tax exemptions.

35. Licenses and Permits

The successful bidder will be required to obtain all necessary licenses and permits necessary to perform the work.

36. Multiple Prime Contractors

If more than one prime contractor will be involved on this project, all contractors are required to examine the Invitation for Bid packages for all other parts of the project.

37. Locally Based Enterprise Requirements (LBE)

This Contract is subject to the requirements of Administrative Code, Section 6-108.1, and the regulations promulgated thereunder. No construction contract will be awarded unless and until these requirements have been complied with in their entirety. The bidder is advised of the provisions set forth below, as well as the provisions with respect to the Locally Based Enterprise Program contained in Article 67 of the Contract. The contractor is advised that:

(A) If any portion of the Contract is subcontracted, not less than ten percent of the total dollar amount of the contract shall be awarded to locally based enterprises ("LBEs"); except, where less than ten percent of the total dollar amount of the Contract is subcontracted, such lesser percentage shall be so awarded.

(B) No contractor shall require performance and payment bonds from LBE subcontractors.

(C) No Contract shall be awarded unless the contractor first identifies in its bid:

- (1) the percentage, dollar amount and type of work to be subcontracted; and
- (2) the percentage, dollar amount and type of work to be subcontracted to LBEs.

(D) Within ten calendar days after notification of low bid, the apparent low bidder shall submit an "LBE Participation Schedule" to the contracting agency. If such schedule does not identify sufficient LBE subcontractors to meet the requirements of Administrative Code Section 6-108.1, the apparent low bidder shall submit documentation of its good faith efforts to meet such requirements.

(1) The "LBE Participation Schedule" shall include:

- (a) the name and address of each LBE that will be given a subcontract,
- (b) the percentage, dollar amount and type of work to be subcontracted to the LBE, and
- (c) the dates when the LBE subcontract work will commence and end.

- (2) The following documents shall be attached to the "LBE Participation Schedule":
- (a) verification letters from each subcontractor listed in the "LBE Participation Schedule" stating that the LBE will enter into a formal agreement for work,
 - (b) certification documents of any proposed LBE subcontractor which is not on the LBE certified list, and
 - (c) copies of the certification letter of any proposed subcontractor which is an LBE.
- (3) Documentation of good faith efforts to achieve the required LBE percentage shall include as appropriate but not limited to the following:
- (a) attendance at prebid meetings, when scheduled by the agency, to advise bidders of contract requirements;
 - (b) advertisement where appropriate in general circulation media, trade association publications and small business media of the specific subcontracts that would be at least equal to the percentage goal for LBE utilization specified by the contractor;
 - (c) written notification to association of small, minority and women contractors soliciting specific subcontractors;
 - (d) written notification by certified mail to LBE firms that their interest in the contract is solicited for specific work items and their estimated values;
 - (e) demonstration of efforts made to select portions of the work for performance by LBE firms in order to increase the likelihood of achieving the stated goal;
 - (f) documented efforts to negotiate with LBE firms for specific subcontracts, including at a minimum:
 - (i) The names, address and telephone numbers of LBE firms that are contacted;
 - (ii) A description of the information provided to LBE firms regarding the plans and specifications for portions of the work to be performed;
 - (iii) Documentation showing that no reasonable price can be obtained from LBE firms;
 - (iv) A statement of why agreements with LBE firms were not reached;
 - (g) a statement of the reason for rejecting any LBE firm which the contractor deemed to be unqualified; and
 - (h) documentation of efforts made to assist the LBE firms contacted that needed assistance in obtaining required insurance.

(E) Unless otherwise waived by the Commissioner with the approval of the Office of Economic and Financial Opportunity, failure of a proposed contractor to provide the information required by paragraphs (C) and (D) above may render the bid non-responsive and the Contract may not be awarded to the bidder. If the contractor states that it will subcontract a specific portion of the work, but can demonstrate despite good faith efforts it cannot achieve its required LBE percentage for subcontracted work until after award of Contract, the Contract may be awarded, subject to a letter of compliance from the contractor stating that it will comply with Administrative Code Section 6-108.1 and subject to approval by the Commissioner. If the contractor has not met its required LBE percentage prior to award, the contractor shall demonstrate that a good faith effort has been made subsequent to award to obtain LBEs on each subcontract until it meets the required percentage.

(F) When a bidder indicates prior to award that no work will be subcontracted, no work may be subcontracted without the prior written approval of the Commissioner, which shall be granted only if the contractor in good faith seeks LBE subcontractors at least six weeks prior to the start of work.

(G) The contractor may not substitute or change any LBE which was identified prior to award of the contract without the written permission of the Commissioner. The contractor shall make a written application to the Commissioner for permission to make such substitution or change, explaining why the contractor needs to change its LBE subcontractor and how the contractor will meet its LBE subcontracting requirement. Copies of such application must be served on the originally identified LBE by certified mail return receipt requested, as well as the proposed substitute LBE. The Commissioner shall determine whether or not to grant the contractor's request for substitution.

38. Bid Submission Requirements

The Bid Submission Requirements are set forth on page 2 of the Bid Booklet.

39. Comptroller's Certificate

This Contract shall not be binding or of any force unless it is registered by the Comptroller in accordance with Section 328 of the City Charter and the Procurement Policy Board Rules. This Contract shall continue in force only after annual appropriation of funds by the City of New York and certification as hereinabove set forth.

40. Procurement Policy Board Rules

This Invitation For Bids is subject to the Rules of the Procurement Policy Board of the City of New York. In the event of a conflict between said Rules and a provision of this Invitation For Bids, the Rules shall take precedence.

41. DDC Safety Requirements

The DDC Safety Requirements apply to the work to be performed pursuant to the Contract. The DDC Safety Requirements are set forth on the following pages.

CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
SAFETY REQUIREMENTS

THE DDC SAFETY REQUIREMENTS INCLUDE THE FOLLOWING SECTIONS:

- I. POLICY ON SITE SAFETY**
- II. PURPOSE**
- III. DEFINITIONS**
- IV. RESPONSIBILITIES**
- V. SAFETY QUESTIONNAIRE**
- VI. SAFETY PROGRAM AND SITE SAFETY PLAN**
- VII. KICK-OFF/PRE-CONSTRUCTION MEETINGS AND SAFETY REVIEW**
- VIII. EVALUATION DURING WORK IN PROGRESS**
- IX. SAFETY PERFORMANCE EVALUATION**

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I. POLICY ON SITE SAFETY

The City of New York Department of Design and Construction (DDC) is committed to a policy of injury and illness prevention and risk management for construction work that will ensure the safety and health of the workers engaged in the projects and the protection of the general public. Therefore, it is DDC's policy that work carried out by Contractors on DDC jobsites must, at a minimum, comply with applicable federal, state and city laws, rules and regulations, including without limitation:

- U. S. Department of Labor 29 Code of Federal Regulations (CFR) Part 1926 and applicable Sub-parts of Part 1910 – U.S. Occupational Safety and Health Administration (OSHA) including, but not limited to "Respiratory Protection" (29 CFR 1910.134), "Permit-Required Confined Spaces" (29 CFR 1910.146), and "Hazard Communication" (29 CFR 1910.1200);
- New York State Department of Labor Industrial Code Rule 23 – Protection in Construction, Demolition and Excavation;
- New York City Construction Codes, Title 28
- NYC Department of Transportation Title 34 Chapter 2 – Highway Rules
- New York State Department of Labor Industrial Code Rule 753
- NYC Local Law No. 113 (2005) Noise Control Code

In addition, all regulations promulgated by the NYC Department of Transportation, including requirements for Maintenance and Protection of Traffic (MPT), are applicable when contained in contract specifications. While MPT is a significant component of work in our Infrastructure Division, it does not supersede or exempt Contractors from complying with other applicable health and safety standards (for example, excavating and trenching standards, operation of heavy equipment and compliance with City environmental and noise regulations).

I. PURPOSE

The purpose of this policy is to ensure that Contractors perform their work and supervise their employees in accordance with all applicable federal, state and city rules and regulations. Further, Contractors will be expected to minimize or eliminate jobsite and public hazard, through a planning, inspection, auditing and corrective action process. The goal is to control risks so that injuries, illnesses and accidents to contractors' employees, DDC employees and the general public, as well as damage to city-owned and private property, are reduced to the lowest level feasible.

III. DEFINITIONS

Agency Chief Contracting Officer (ACCO): The ACCO shall mean the person delegated authority by the Commissioner to organize and supervise the procurement activity of subordinate Agency staff in conjunction with the CCPO.

Competent Person: As defined by OSHA, an individual who is capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous, or dangerous to employees or the general public, and who has authorization to take prompt corrective measures to eliminate them.

Construction Safety Auditor: A representative of the QACS Construction Safety Unit who provides inspection and assessment services to enhance health and safety on all DDC construction projects. The activities of the Construction Safety Auditor include performing site surveys, reviewing health and safety plans, reviewing construction permits, and rendering technical advice and assistance to DDC Resident Engineers and Project Managers.

Construction Safety Unit: A part of QACS within the Division of Technical Support that assesses contractor safety on DDC jobsites and advises responsible parties of needed corrective actions.

Construction Superintendent: A representative of the contractor responsible for overseeing performance of the required construction work. This individual must engage in sound construction practices, and is responsible to maintain a safe work site. In the case of a project involving the demolition, alteration or new construction of buildings, the Construction Superintendent must be licensed by the NYC Department of Buildings.

Contractor: For purposes of these Safety Requirements, the term "Contractor" shall mean any person or entity that enters into a contract for the performance of construction work on a DDC project. The term "Contractor" shall include any person or entity which enters into any of the following types of contracts: (1) a prime construction contract for a specific project, (2) a prime construction contract using the Job Order Contracting System ("JOCS Contract"), and (3) a subcontract with a CM/Builder ("First Tier Subcontract").

Director - Quality Assurance and Construction Safety (QACS): Responsible for the operations of the QACS Construction Safety Unit and the DDC Site Safety management programs.

Job Hazard Assessment (JHA): A process of identifying site-specific hazards that may be present during construction and establishing the means and methods to reduce or eliminate those hazards.

Jobsite Safety Coordinator: A person designated by the Contractor to be onsite during all activities. This individual shall have received, at a minimum, the OSHA 10-hour construction safety program. Other examples of acceptable training are the 30-hour OSHA Safety and Health Standards for the Construction Industry training program (OSHA 510) or a degree/certificate in a safety and health from a college-level curriculum. This person does not necessarily have to be dedicated full-time to site safety, but must have sufficient experience and authority to undertake corrective action and must qualify to be a competent person. For certain projects, as defined in NYC Construction Codes - Title 28, this person may be required to have a Site Safety Manager's License issued by the NYC DOB.

Qualified Person: As defined by OSHA, an individual who, by possession of a recognized degree, certificate, license or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his or her ability to solve problems relating to the subject matter, the work, or the project. Qualified Persons are required under regulation to address issues pertaining, but without limit, to fall protection, scaffold design and trenching and shoring, among others.

Resident Engineer (RE) / Construction Project Manager (CPM): Representative of the Commissioner duly designated by the Commissioner to be his/her representative at the site of the work. (The RE/CPM may be a third-party consultant, including a CM, retained by DDC.)

Safety Program: Established by the Contractor that covers all operations of that Contractor and establishes the Contractor's overall safety policy, regulatory compliance plan and minimum safety standards. The Safety Program must be submitted prior to the commencement of work at the site and is subject to review and acceptance by the Construction Safety Unit.

Safety Questionnaire: Used by DDC to evaluate Contractor's current and past safety performance. It is required to be completed by all Contractors initially when submitting bids for Construction work, or when being pre-qualified and updated annually or as requested by the DDC.

Site Safety Plan: A site-specific safety plan developed by the Contractor for a specific project. The Site Safety Plan must identify hazards associated with the project, and include specific safety precautions and training appropriate and necessary to complete the work. The Site Safety Plan must be submitted prior to the commencement of work at the site and is subject to review and acceptance by the Construction Safety Unit.

Unsafe or Unhealthy Condition: A condition that could be potentially hazardous to the health and safety of personnel or the public, and/or damaging to equipment, machinery, property or the environment.

Weekly Safety Meetings: Weekly documented jobsite safety meetings, given to all jobsite personnel by contractor, with the purpose of discussing general safety topics and job specific requirements encountered at the DDC work site.

IV. RESPONSIBILITIES

All persons who manage, perform, and provide support for construction projects shall conduct operations in compliance with the requirements identified in this Policy and all applicable governing regulatory agency requirements and guidelines pertaining to safety in construction.

A. Resident Engineer / Construction Project Manager / Construction Manager

- Monitors the issuance of safety-related permits, approvals and drawings and maintains copies on site.
- Monitors construction-related work activities to confirm that they are conducted in accordance with DDC policies and all applicable regulations that pertain to construction safety.
- Maintains documentation and periodically attends weekly safety meeting.
- Notifies the Construction Safety Unit and the ACCO's Insurance and Risk Management Unit of project-related accidents and emergencies, as per DDC's Construction Safety Emergency Protocol.
- Gathers facts related to all accidents and prepares DDC Accident Reports.
- Notifies the Construction Safety Unit of outside regulatory agency inspections and forwards a copy of the inspection report within three days of its receipt.
- Monitors the conditions at the site for conformance with the Site Safety Plan and DDC construction documents.
- Notifies the contractor and DDC in the event that any condition or activity exists that is not in compliance with the Site Safety Plan, applicable federal, state or local codes or any condition that presents a potential risk of injury to the public or workers or possible damage to property.
- Notifies DDC of any emergency condition and directs the contractor to provide such labor, materials, equipment and supervision to abate such conditions.
- Reports gross safety violations to the Construction Safety Unit immediately.

A. Contractors

- Complete a Safety Questionnaire and submit with its bid or as part of a pre-qualification package.
- Provide a Written Job Hazard Assessment (JHA) that identifies expected safety issues of the work to be performed. JHA shall be included with the Site Safety Plan submitted by the contractor.
- Submit a Site Safety Plan and Safety Program within 15 days of issuance of the Notice to Proceed, or as otherwise directed. The Site Safety Plan and Safety Program are subject to review and acceptance by the Construction Safety Unit prior to the commencement of work at the site. The Site Safety Plan shall be revised and updated as necessary.
- Ensure that all employees are aware of the hazards associated with the project through formal and informal training and/or other communications. Conduct and document weekly safety meetings for the duration of the project. Documentation to be provided to the RE/CPM/CM on a monthly basis.
- Name a Construction Superintendent, if required.
- Name a Job Site Safety Coordinator. The Contractor will be required to identify the Job Site Safety Coordinator in the Site Safety Plan.
- Comply with all mandated federal, state and local safety and health rules and regulations.
- Comply with all provisions of the Site Safety Plan.
- As part of the Site Safety Plan, prepare a site specific MPT (if not otherwise provided in the contract documents) and comply with all of its provisions.
- Conduct and document site-specific safety orientation for Contractor personnel to review the hazards associated with the project as identified in the Site Safety Plan and the specific safety procedures and controls that will be used to protect workers, the general public and property. The Job Site Safety Coordinator will conduct this training prior to mobilization and provide documentation to the RE/CPM/CM.
- Provide, replace and adequately maintain at or around the project site, suitable and sufficient signage, lights, barricades and enclosures (fences, sidewalk sheds, netting, bracing, etc.).
- Report unsafe conditions or hazards to the DDC RE/CPM/CM as soon as practical, but no more than 24 hours after discovery, and take action to remove or abate such conditions.

- Report any accident involving injuries to workers or the general public, as well as property damage, to the DDC RE/CPM/CM within two (2) hours.
- Notify the DDC RE/CPM/CM within two (2) hours of the start of an inspection by any regulatory agency personnel, including OSHA.
- Maintain all records pertaining to all required compliance documents and accident and injury reports.
- Respond to DDC recommendations on safety, which shall in no way relieve the Contractor of its responsibilities for safety on the project. The Contractor has sole responsibility for safety.

V. SAFETY QUESTIONNAIRE

DDC requires that all Contractors provide information regarding their current and past safety and environmental performance and programs. This will be accomplished by the use of the DDC Safety Questionnaire. As a part of the bid submittal package, the contractor must submit a completed DDC Safety Questionnaire listing their workers' compensation experience modification rating and OSHA Incidence Rates for the three (3) years prior to the date of the bid opening. DDC may request a Contractor to update its Questionnaire at any time or to provide more detailed information. The Contractor must provide the requested update within 30 days.

The following criteria will be used by DDC in reviewing the Contractor's responsibility, which will be based on the information provided on the questionnaire:

- Criteria 1: OSHA Injury and Illness Rates (I&IR) are no greater than the average for the industry (based on the most current Bureau of Labor Statistics data for the Contractors SIC code); and
- Criteria 2: Insurance workers compensation Experience Modification Rate (EMR) equal to or less than 1.0; and
- Criteria 3: Any willful violations issued by OSHA or NYC DOB within the last three years; and
- Criteria 4: A fatality (worker or member of public) experienced on or near Contractor's worksite within the last three (3) years; and
- Criteria 5: An unacceptable rating by QACS based on past performance on DDC projects; and
- Criteria 6: Contractor has in place an acceptable corporate safety program and its employees shall have completed all documented relative safety training; and
- Criteria 7: Contractor shall provide OSHA Injury Records (currently OSHA 300 Log) for the last three (3) years.

If the Contractor fails to meet the basic criteria listed above, the Construction Safety Unit may request, through the ACCO, more detail concerning the Contractor's safety experience. DDC may request the Contractor to provide copies of, among other things, OSHA records, OSHA and DOB citations, EPA citations and written Safety Programs.

VI. SAFETY PROGRAM AND SITE SAFETY PLAN

Within fifteen (15) days of issuance of the Notice to Proceed, or as otherwise directed, the Contractor shall submit the following: (1) Safety Program, and (2) Site Safety Plan. The Safety Program shall set forth the Contractor's overall safety policy, regulatory compliance plan and minimum safety standard, and the Site Safety Plan shall identify hazards associated with the project, and include specific safety precautions and training appropriate and necessary to complete the work. The Safety Program and the Site Safety Plan are subject to review and acceptance by the Construction Safety Unit prior to the commencement of work at the site. Failure by the contractor to submit an acceptable Site Safety Plan and Safety Program shall be grounds for default.

The Site Safety Plan shall apply to all Contractor and subcontractor operations, and shall have at a minimum, the following elements. Each element shall be described in a separate section in the written document. It may be necessary to modify the basic format for certain unique or high-risk projects (such as tunnels or high-rise construction). The basic elements are as follows:

1. **Responsibility and Organization:** Identify the person or persons with authority and responsibility for implementing the Site Safety Plan. Provide an organization chart and define levels of authority and responsibility. Identify the Competent Person, the Construction Superintendent (if required), the Job Safety Coordinator and the Qualified Person required for this project.
2. **Communication:** Establish a system for communicating with employees and subcontractors on matters relating to worker and public safety and health and environmental protection, including provisions designed to encourage employees to inform the employer of hazards at the worksite without fear of reprisal. An emergency response notification protocol is to be established that also includes after hours contact numbers. The plan must also include provisions for weekly safety meetings held by the Job Site Safety Coordinator.
3. **Job Hazard Assessment:** A written document submitted by the contractor, used to identify expected job hazards and public safety risks and state the specific means and methods to reduce, control or eliminate those hazards. This part of the Site Safety Plan must also include how on-going evaluations of those risks and hazards will be carried out, including plans for periodic inspections to identify unsafe conditions, work practices and public safety hazards.
4. **Accident/Exposure Investigation:** Establish a procedure to investigate and report occupational and public injury or illness, property damage, vehicle accidents or other mishaps.
5. **Hazard Correction:** Establish means, methods and/or procedures for correcting unsafe or unhealthy conditions that might be exposing both the public and workers to hazards. Corrective actions must be taken immediately when observed or discovered. Should an imminent hazard exist which cannot be immediately abated without endangering employees, the public and/or property, remove or restrict all exposed persons from the area except those necessary to correct the existing condition. Employees necessary to correct the hazardous condition shall be provided the necessary safeguards. When corrective actions cannot be taken immediately, temporary measures should be taken until such time permanent measures are taken to eliminate the potential risks or hazards.
6. **Training:** Describe site-specific hazard training programs. In addition to the required safety orientation, additional site specific training, in the form of required weekly safety meetings, will be required. Contractors must also initiate training when: a) new employees are hired; b) employees are given new job assignments for which training has not been previously received; c) new substances, processes, procedures or equipment are introduced that might represent a new public or worker hazard; d) the employee is made aware of a new or previously unrecognized hazard; e) new supervisors are assigned to familiarize themselves with the safety and health hazards to which employees under their immediate direction and control may be exposed; and f) after a jobsite incident or accident has occurred.
7. **Recordkeeping:** Establish procedures to maintain records of scheduled and periodic inspections, weekly safety meetings, and training records. Updated records shall be maintained at the jobsite, accessible to the Construction Safety Auditors and/or Quality Assurance Auditors/RE/CPM, and retained in accordance with DDC policy.

The most critical component of the Site Safety Plan is the Job Hazard Assessment section. This section must address specific hazards that are anticipated throughout the project. Each Site Safety Plan must address, at a minimum:

- Public and pedestrian safety
- Fall protection
- Electrical hazards
- Scaffolding
- Fire protection
- Emergency notification & response
- Housekeeping / debris removal
- Dust control
- Maintenance and protection of traffic
- Trenching and excavating
- Heavy equipment operations
- Material / equipment storage
- Environmental contamination
- Sheeting and shoring
- Alcohol and Drug Abuse Policy

The following additional hazards must be addressed, if applicable, based on the contract safety specifications and/or the results of the JHA (the list is not all-inclusive):

- Basic Personal Protective Equipment
- Compressed Air
- Compressed Gas Cylinders
- Cranes, Derricks and Hoists
- Demolition
- Electrical safety
- Excavations and Trenching
- Fall Protection – Floor openings/Stairways
- Fall Protection – Guardrails Toe boards etc
- Fall Protection – Leading Edge
- Fall Protection – Personal Fall Protection Devices
- Fire Protection and Fire Prevention
- Hazard Communication (RIGHT TO KNOW)
- Hazardous Energy & Lock Out / Tag Out
- Housekeeping/ Sanitation
- Maintenance and Protection of Traffic (MPT)
- Man Lifts /Aerial Lifts
- Marine Operations
- Motor Vehicle Safety
- Overhead Power lines
- Permit Required Confined Space
- Portable Ladders
- Powered Actuated Tools
- Powered Material Handling Equipment
- Scaffolds – Mobile
- Scaffolds – Stationary
- Scaffolds – Suspended
- Slings
- Steel Erection
- Welding and Cutting (Hot Work)
- Airborne Contaminants – Particulates – General
- Asbestos
- Blood borne Pathogens
- Hearing Protection
- Lead in Construction
- Mercury in Construction
- PCB's
- Respiratory Protection
- Silica
- Thermal Stress
- West Nile Virus
- Rodents and Vermin
- Noise Mitigation Plan

Certain DDC programs, such as Job Order Contracting System (JOCS), may not necessarily require Site Safety Plans. The JOCS contractor will be required to submit a Safety Program. In addition, certain DDC Operating Units may establish program or client-specific safety requirements. The contractor's Site Safety Plan must address such program or client specific safety requirements.

VII. KICK-OFF MEETINGS/PRE-CONSTRUCTION AND SAFETY REVIEW

As part of the construction kick-off meeting, a Site Safety Plan review will be part of the agenda. A QACS representative will participate in this meeting with the contractor prior to the start of the project for the purpose of:

- A. Reviewing the safety issues detailed in the contract.
- B. Reviewing the Site Safety Plan.
- C. Reviewing any new issues or information that was not previously addressed.
- D. Discussing planned inspections and audits of the site by DDC personnel.

VIII. EVALUATION DURING WORK IN PROGRESS

The Contractor's adherence to these Safety Requirements will be monitored throughout the project. This will be accomplished by the following:

- A. Use of a safety checklist by a representative of the Construction Safety Unit or other designated DDC representative or Consultant during regular, unannounced inspections of the job site. Field Exit Conferences will be held with the RE/CPM, Contractor Superintendents or Safety Representatives.
- B. The RE/CPM will continually monitor the safety and environmental performance of the contractor's employees and work methods. Deficiencies shall be brought to the attention of the contractor's representative on site for immediate correction. The DDC representative will maintain a written record of these deficiencies and forward them to the Construction Safety Unit on a weekly basis. Any critical deficiencies shall be immediately reported to QACS phone# (718) 391-1624 or (718) 391-1911.
- C. If the Contractor's safety performance during the project is not up to DDC standards (safety performance measure, accident/incident rate, etc.) the Director- QACS, or designee will meet with the Contractor's safety representative, the DDC project manager, the RE/CPM, or the DDC Environmental Specialist (if environmental issues are involved). The purpose of this meeting is to 1) determine the level of non-compliance; 2) explain and clarify the safety/environmental provisions; 3) agree on a future course of action to correct the deficiencies.
- D. If the deficiencies continue to occur with inadequate attention by the contractor, this shall, among other remedies available, be grounds for default.
- E. The contractor shall inform the Construction Safety Unit and ACCO Insurance and Risk Management Unit of all medical injuries or illnesses that require doctors' treatment resulting from an on-the-job incident within 24 hours of the occurrence. The Construction Safety Unit shall also be immediately informed of all fatalities, catastrophic accidents with more than one employee hospitalized, any injuries to members of the general public and major equipment damage (e.g., property damage, equipment rollovers, loads dropped from crane). QACS shall maintain a record of all contractor injuries and illnesses during the project and provide regular reports to the Agency.
- F. The Construction Safety Unit shall be immediately notified at the start of any NYS-DOL/ NYC-COSH/ OSHA/ EPA inspections. The Director of Quality Assurance & Construction Safety shall maintain a log of all contractor OSHA/EPA inspections and citations during the project.

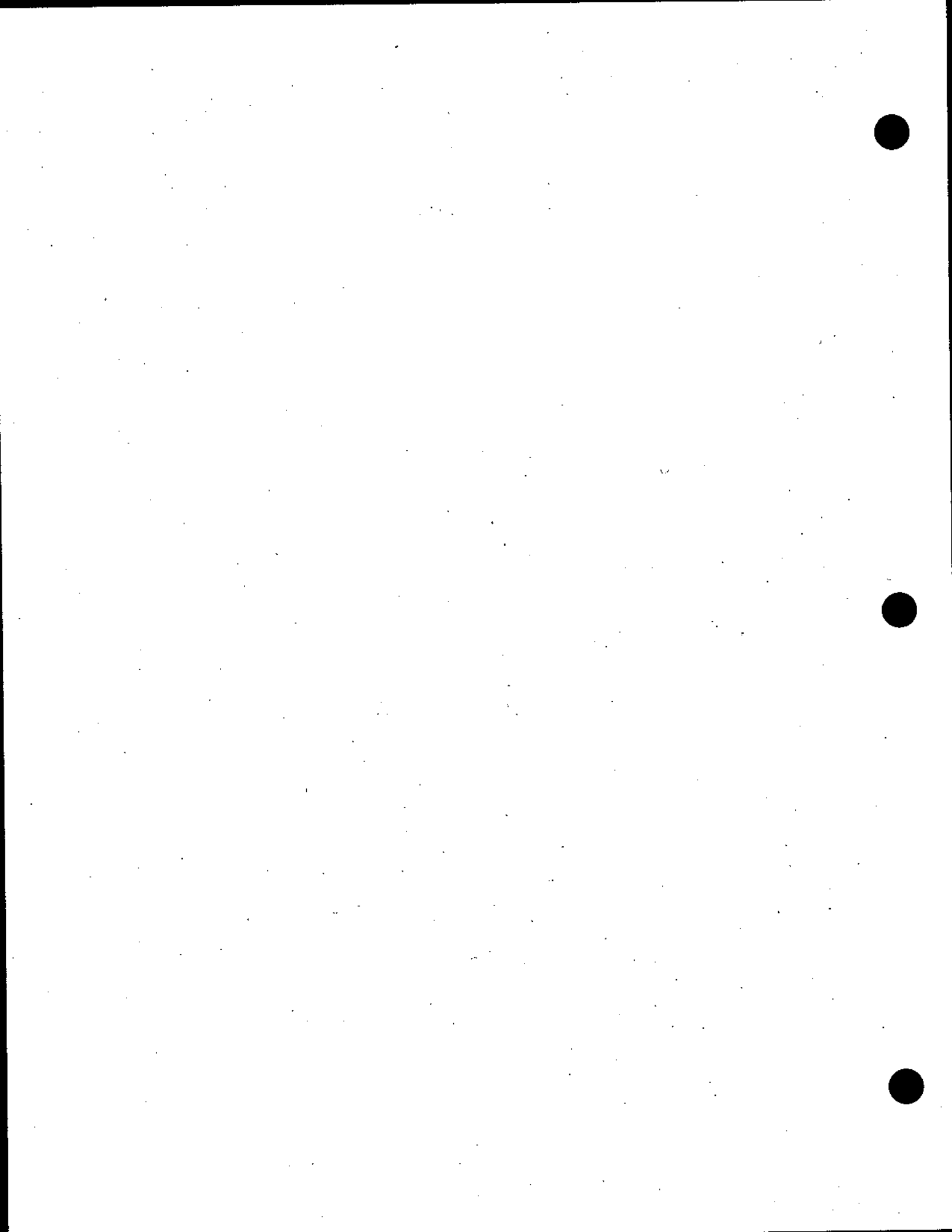
IX. SAFETY PERFORMANCE EVALUATION

The contractor's safety record, including all DDC inspection results, will be considered as part of the Contractor's performance evaluation at the conclusion of the project. Poor safety performance during the course of the project shall be a reason to rate a Contractor unsatisfactory which will be reflected in the City's Vendex system and will be considered for future procurement actions as set forth in the City's Procurement Policy Board Rules.

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CITY OF NEW YORK
STANDARD CONSTRUCTION CONTRACT

December 2013



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STANDARD CONSTRUCTION CONTRACT**

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WITNESSETH:

The parties, in consideration of the mutual agreements contained herein, agree as follows:

**CHAPTER I
THE CONTRACT AND DEFINITIONS**

ARTICLE 1. THE CONTRACT

1.1 Except for titles, subtitles, headings, running headlines, tables of contents and indices (all of which are printed herein merely for convenience), the following, except for such portions thereof as may be specifically excluded, shall be deemed to be part of this Contract:

1.1.1 All provisions required by law to be inserted in this Contract, whether actually inserted or not;

1.1.2 The Contract Drawings and Specifications;

1.1.3 The General Conditions and Special Conditions, if any;

1.1.4 The Contract;

1.1.5 The Information for Bidders; Request for Proposals; Notice of Solicitation and Proposal For Bids; Bid or Proposal, and, if used, the Bid Booklet;

1.1.6 All Addenda issued prior to the receipt of the bids; the Notice of Award; Performance and Payment Bonds, if required; and the Notice to Proceed or the Order to Work.

1.2 Should any conflict occur in or between the Drawings and Specifications, the Contractor shall be deemed to have estimated the most expensive way of doing the Work, unless the Contractor shall have asked for and obtained a decision in writing from the Commissioner of the Agency that is entering into this Contract, before the submission of its bid, as to what shall govern.

ARTICLE 2. DEFINITIONS

2.1 The following words and expressions, or pronouns used in their stead, shall, wherever they appear in this Contract, be construed as follows, unless a different meaning is clear from the context:

2.1.1 "Addendum" or "Addenda" shall mean the additional Contract provisions and/or technical clarifications issued in writing by the Commissioner prior to the receipt of bids.

2.1.2 "Agency" shall mean a city, county, borough or other office, position, department, division, bureau, board or commission, or a corporation, institution or agency of government, the expenses of which are paid in whole or in part from the City treasury.

2.1.3 "Agency Chief Contracting Officer" (ACCO) shall mean a person delegated authority by the Commissioner to organize and supervise the procurement activity of subordinate Agency staff in conjunction with the CCPO, or his/her duly authorized representative.

2.1.4 "Allowance" shall mean a sum of money which the Agency may include in the total amount of the Contract for such specific contingencies as the Agency believes may be necessary to complete the Work, e.g., lead or asbestos remediation, and for which the Contractor will be paid on the basis of stipulated unit prices or a formula set forth in the Contract or negotiated between the parties provided, however, that if the Contractor is not directed to use the Allowance, the Contractor shall have no right to such money and it shall be deducted from the total amount of the Contract.

2.1.5 "City" shall mean the City of New York.

2.1.6 "City Chief Procurement Officer" (CCPO) shall mean a person delegated authority by the Mayor to coordinate and oversee the procurement activity of Mayoral agency staff, including the ACCO and any offices which have oversight responsibility for the procurement of construction, or his/her duly authorized representative.

2.1.7 "Commissioner" shall mean the head of the Agency that has entered into this Contract, or his/her duly authorized representative.

2.1.8 "Comptroller" shall mean the Comptroller of the City of New York.

2.1.9 "Contract" or "Contract Documents" shall mean each of the various parts of the contract referred to in Article 1 hereof, both as a whole and severally.

2.1.10 "Contract Drawings" shall mean only those drawings specifically entitled as such and listed in the Specifications or in any Addendum, or any drawings furnished by the Commissioner, pertaining or supplemental thereto.

2.1.11 "Contract Work" shall mean everything required to be furnished and done by the Contractor by any one or more of the parts of the Contract referred to in Article 1, except Extra Work as hereinafter defined.

2.1.12 "Contractor" shall mean the entity which executed this Contract, whether a corporation, firm, partnership, joint venture, individual, or any combination thereof, and its, their, his/her successors, personal representatives, executors, administrators, and assigns, and any person, firm, partnership, joint venture, individual, or corporation which shall at any time be substituted in the place of the Contractor under this Contract.

2.1.13 "Days" shall mean calendar days, except where otherwise specified.

2.1.14 "Engineer" or "Architect" or "Project Manager" shall mean the person so designated in writing by the Commissioner in the Notice to Proceed or the Order to Work to act as such in relation to this Contract, including a private Architect or Engineer or Project Manager, as the case may be. Subject to written approval by the Commissioner, the Engineer, Architect or Project Manager may designate an authorized representative.

2.1.15 "Engineering Audit Officer" (EAO) shall mean the person so designated by the Commissioner to perform responsible auditing functions hereunder.

2.1.16 "Extra Work" shall mean Work other than that required by the Contract at the time of award which is authorized by the Commissioner pursuant to Chapter VI of this Contract.

2.1.17 "Federal-Aid Contract" shall mean a contract in which the United States (federal) Government provides financial funding as so designated in the Information for Bidders.

- 2.1.18 "Final Acceptance" shall mean final written acceptance of all the Work by the Commissioner, a copy of which shall be sent to the Contractor.
- 2.1.19 "Final Approved Punch List" shall mean a list, approved pursuant to Article 14.2.2, specifying those items of Work to be completed by the Contractor after Substantial Completion and dates for the completion of each item of Work.
- 2.1.20 "Law" or "Laws" shall mean the Constitution of the State of New York, the New York City Charter, the New York City Administrative Code, a statute of the United States or of the State of New York, a local law of the City of New York, any ordinance, rule or regulation having the force of law, or common law.
- 2.1.21 "Materialman" shall mean any corporation, firm, partnership, joint venture, or individual, other than employees of the Contractor, who or which contracts with the Contractor or any Subcontractor, to fabricate or deliver, or who actually fabricates or delivers, plant, materials or equipment to be incorporated in the Work.
- 2.1.22 "Means and Methods of Construction" shall mean the labor, materials, temporary structures, tools, plant, and construction equipment, and the manner and time of their use, necessary to accomplish the result intended by this Contract.
- 2.1.23 "Notice to Proceed" or "Order to Work" shall mean the written notice issued by the Commissioner specifying the time for commencement of the Work and the Engineer, Architect or Project Manager.
- 2.1.24 "Other Contractor(s)" shall mean any contractor (other than the entity which executed this Contract or its Subcontractors) who or which has a contract with the City for work on or adjacent to the building or Site of the Work.
- 2.1.25 "Payroll Taxes" shall mean State Unemployment Insurance (SUI), Federal Unemployment Insurance (FUI), and payments pursuant to the Federal Insurance Contributions Act (FICA).
- 2.1.26 "Project" shall mean the public improvement to which this Contract relates.
- 2.1.27 "Procurement Policy Board" (PPB) shall mean the Agency of the City of New York whose function is to establish comprehensive and consistent procurement policies and rules which shall have broad application throughout the City.
- 2.1.28 "Required Quantity" in a unit price Contract shall mean the actual quantity of any item of Work or materials which is required to be performed or furnished in order to comply with the Contract.
- 2.1.29 "Resident Engineer" shall mean the representative of the Commissioner duly designated by the Commissioner to be his/her representative at the site of the Work.
- 2.1.30 "Site" shall mean the area upon or in which the Contractor's operations are carried on, and such other areas adjacent thereto as may be designated as such by the Engineer.
- 2.1.31 "Small Tools" shall mean items that are ordinarily required for a worker's job function, including but not limited to, equipment that ordinarily has no licensing, insurance

or substantive storage costs associated with it; such as circular and chain saws, impact drills, threaders, benders, wrenches, socket tools, etc.

2.1.32 "Specifications" shall mean all of the directions, requirements, and standards of performance applying to the Work as hereinafter detailed and designated under the Specifications.

2.1.33 "Subcontractor" shall mean any person, firm or corporation, other than employees of the Contractor, who or which contracts with the Contractor or with its subcontractors to furnish, or actually furnishes labor, or labor and materials, or labor and equipment, or superintendence, supervision and/or management at the Site. Wherever the word Subcontractor appears, it shall also mean sub-Subcontractor.

2.1.34 "Substantial Completion" shall mean the written determination by the Engineer that the Work required under this Contract is substantially, but not entirely, complete and the approval of the Final Approved Punch List.

2.1.35 "Work" shall mean all services required to complete the Project in accordance with the Contract Documents, including without limitation, labor, material, superintendence, management, administration, equipment, and incidentals, and obtaining any and all permits, certifications and licenses as may be necessary and required to complete the Work, and shall include both Contract Work and Extra Work.

CHAPTER II THE WORK AND ITS PERFORMANCE

ARTICLE 3. CHARACTER OF THE WORK

3.1 Unless otherwise expressly provided in the Contract Drawings, Specifications, and Addenda, the Work shall be performed in accordance with the best modern practice, utilizing, unless otherwise specified in writing, new and unused materials of standard first grade quality and workmanship and design of the highest quality, to the satisfaction of the Commissioner.

ARTICLE 4. MEANS AND METHODS OF CONSTRUCTION

4.1 Unless otherwise expressly provided in the Contract Drawings, Specifications, and Addenda, the Means and Methods of Construction shall be such as the Contractor may choose; subject, however, to the Engineer's right to reject the Means and Methods of Construction proposed by the Contractor which in the opinion of the Engineer:

4.1.1 Will constitute or create a hazard to the Work, or to persons or property; or

4.1.2 Will not produce finished Work in accordance with the terms of the Contract; or

4.1.3 Will be detrimental to the overall progress of the Project.

4.2 The Engineer's approval of the Contractor's Means and Methods of Construction, or his/her failure to exercise his/her right to reject such means or methods, shall not relieve the Contractor of its obligation to complete the Work as provided in this Contract; nor shall the exercise of such right to reject create a cause of action for damages.

ARTICLE 5. COMPLIANCE WITH LAWS

5.1 The Contractor shall comply with all Laws applicable to this Contract and to the Work to be done hereunder.

5.2 Procurement Policy Board Rules: This Contract is subject to the Rules of the PPB ("PPB Rules") in effect at the time of the bid opening for this Contract. In the event of a conflict between the PPB Rules and a provision of this Contract, the PPB Rules shall take precedence.

5.3 Noise Control Code provisions.

5.3.1 In accordance with the provisions of Section 24-216(b) of the Administrative Code of the City ("Administrative Code"), Noise Abatement Contract Compliance, devices and activities which will be operated, conducted, constructed or manufactured pursuant to this Contract and which are subject to the provisions of the City Noise Control Code shall be operated, conducted, constructed, or manufactured without causing a violation of the Administrative Code. Such devices and activities shall incorporate advances in the art of noise control development for the kind and level of noise emitted or produced by such devices and activities, in accordance with regulations issued by the Commissioner of the City Department of Environmental Protection.

5.3.2 The Contractor agrees to comply with Section 24-219 of the Administrative Code and implementing rules codified at 15 Rules of the City of New York ("RCNY") Section 28-100 *et seq.* In accordance with such provisions, the Contractor, if the Contractor is the responsible party under such regulations, shall prepare and post a Construction Noise Mitigation Plan at each Site, in which the Contractor shall certify that all construction tools and equipment have been maintained so that they operate at normal manufacturers operating specifications. If the Contractor cannot make this certification, it must have in place an Alternative Noise Mitigation Plan approved by the City Department of Environmental Protection. In addition, the Contractor's certified Construction Noise Mitigation Plan is subject inspection by the City Department of Environmental Protection in accordance with Section 28-101 of Title 15 of RCNY. No Contract Work may take place at a Site unless there is a Construction Noise Mitigation Plan or approved Alternative Noise Mitigation Plan in place. In addition, the Contractor shall create and implement a noise mitigation training program. Failure to comply with these requirements may result in fines and other penalties pursuant to the applicable provisions of the Administrative Code and RCNY.

5.4 Ultra Low Sulfur Diesel Fuel: In accordance with the provisions of Section 24-163.3 of the Administrative Code, the Contractor specifically agrees as follows:

5.4.1 Definitions. For purposes of this Article 5.4, the following definitions apply:

5.4.1(a) "Contractor" means any person or entity that enters into a Public Works Contract with a City Agency, or any person or entity that enters into an agreement with such person or entity, to perform work or provide labor or services related to such Public Works Contract.

5.4.1(b) "Motor Vehicle" means any self-propelled vehicle designed for transporting persons or property on a street or highway.

5.4.1(c) "Nonroad Engine" means an internal combustion engine (including the fuel system) that is not used in a Motor Vehicle or a vehicle used solely for competition, or that is not subject to standards promulgated under Section 7411 or Section 7521 of

Title 42 of the United States Code, except that this term shall apply to internal combustion engines used to power generators, compressors or similar equipment used in any construction program or project.

5.4.1(d) "Nonroad Vehicle" means a vehicle that is powered by a Nonroad Engine, fifty (50) horsepower and greater, and that is not a Motor Vehicle or a vehicle used solely for competition, which shall include, but not be limited to, excavators, backhoes, cranes, compressors, generators, bulldozers, and similar equipment, except that this term shall not apply to horticultural maintenance vehicles used for landscaping purposes that are powered by a Nonroad Engine of sixty-five (65) horsepower or less and that are not used in any construction program or project.

5.4.1(e) "Public Works Contract" means a contract with a City Agency for a construction program or project involving the construction, demolition, restoration, rehabilitation, repair, renovation, or abatement of any building, structure, tunnel, excavation, roadway, park or bridge; a contract with a City Agency for the preparation for any construction program or project involving the construction, demolition, restoration, rehabilitation, repair, renovation, or abatement of any building, structure, tunnel, excavation, roadway, park or bridge; or a contract with a City Agency for any final work involved in the completion of any construction program or project involving the construction, demolition, restoration, rehabilitation, repair, renovation, or abatement of any building, structure, tunnel, excavation, roadway, park or bridge.

5.4.1(f) "Ultra Low Sulfur Diesel Fuel" means diesel fuel that has a sulfur content of no more than fifteen parts per million (15 ppm).

5.4.2 Ultra Low Sulfur Diesel Fuel

5.4.2(a) All Contractors shall use Ultra Low Sulfur Diesel Fuel in diesel-powered Nonroad Vehicles in the performance of this Contract.

5.4.2(b) Notwithstanding the requirements of Article 5.4.2(a), Contractors may use diesel fuel that has a sulfur content of no more than thirty parts per million (30 ppm) to fulfill the requirements of this Article 5.4.2, where the Commissioner of the City Department of Environmental Protection ("DEP Commissioner") has issued a determination that a sufficient quantity of Ultra Low Sulfur Diesel Fuel is not available to meet the needs of Agencies and Contractors. Any such determination shall expire after six (6) months unless renewed.

5.4.2(c) Contractors shall not be required to comply with this Article 5.4.2 where the City Agency letting this Contract makes a written finding, which is approved, in writing, by the DEP Commissioner, that a sufficient quantity of Ultra Low Sulfur Diesel Fuel, or diesel fuel that has a sulfur content of no more than thirty parts per million (30 ppm) is not available to meet the requirements of Section 24-163.3 of the Administrative Code, provided that such Contractor in its fulfillment of the requirements of this Contract, to the extent practicable, shall use whatever quantity of Ultra Low Sulfur Diesel Fuel or diesel fuel that has a sulfur content of no more than thirty parts per million (30 ppm) is available. Any finding made pursuant to this Article 5.4.2(c) shall expire after sixty (60) Days, at which time the requirements of this Article 5.4.2 shall be in full force and effect unless the City Agency renews the finding in writing and such renewal is approved by the DEP Commissioner.

5.4.2(d) Contractors may check on determinations and approvals issued by the DEP Commissioner pursuant to Section 24-163.3 of the Administrative Code, if any, at www.dep.nyc.gov or by contacting the City Agency letting this Contract.

5.4.2(e) The requirements of this Article 5.4.2 do not apply where they are precluded by federal or State funding requirements or where the Contract is an emergency procurement.

5.4.3 Best Available Technology

5.4.3(a) All Contractors shall utilize the best available technology for reducing the emission of pollutants for diesel-powered Nonroad Vehicles in the performance of this Contract. For determinations of best available technology for each type of diesel-powered Nonroad Vehicle, Contractors shall comply with the regulations of the City Department of Environmental Protection, as and when adopted, Chapter 14 of Title 15 of the Rules of the City of New York (RCNY). The Contractor shall fully document all steps in the best available technology selection process and shall furnish such documentation to the City Agency or the DEP Commissioner upon request. The Contractor shall retain all documentation generated in the best available technology selection process for as long as the selected best available technology is in use.

5.4.3(b) No Contractor shall be required to replace best available technology for reducing the emission of pollutants or other authorized technology utilized for a diesel-powered Nonroad Vehicle in accordance with the provisions of this Article 5.4.3 within three (3) years of having first utilized such technology for such vehicle.

5.4.3(c) This Article 5.4.3 shall not apply to any vehicle used to satisfy the requirements of a specific Public Works Contract for fewer than twenty (20) Days.

5.4.3(d) The Contractor shall not be required to comply with this Article 5.4.3 with respect to a diesel-powered Nonroad Vehicle under the following circumstances:

5.4.3(d)(i) Where the City Agency makes a written finding, which is approved, in writing, by the DEP Commissioner, that the best available technology for reducing the emission of pollutants as required by this Article 5.4.3 is unavailable for such vehicle, the Contractor shall use whatever technology for reducing the emission of pollutants, if any, is available and appropriate for such vehicle.

5.4.3(d)(ii) Where the DEP Commissioner has issued a written waiver based upon the Contractor having demonstrated to the DEP Commissioner that the use of the best available technology for reducing the emission of pollutants might endanger the operator of such vehicle or those working near such vehicle, due to engine malfunction, the Contractor shall use whatever technology for reducing the emission of pollutants, if any, is available and appropriate for such vehicle, which would not endanger the operator of such vehicle or those working near such vehicle.

5.4.3(d)(iii) In determining which technology to use for the purposes of Articles 5.4.3(d)(i) and 5.4.3(d)(ii) above, the Contractor shall primarily consider the reduction in emissions of particulate matter and secondarily consider the reduction in emissions of nitrogen oxides associated with the use of such

technology, which shall in no event result in an increase in the emissions of either such pollutant.

5.4.3(d)(iv) The Contractor shall submit requests for a finding or a waiver pursuant to this Article 5.4.3(d) in writing to the DEP Commissioner, with a copy to the ACCO of the City Agency letting this Contract. Any finding or waiver made or issued pursuant to Articles 5.4.3(d)(i) and 5.4.3(d)(ii) above shall expire after one hundred eighty (180) Days, at which time the requirements of Article 5.4.3(a) shall be in full force and effect unless the City Agency renews the finding, in writing, and the DEP Commissioner approves such finding, in writing, or the DEP Commissioner renews the waiver, in writing.

5.4.3(e) The requirements of this Article 5.4.3 do not apply where they are precluded by federal or State funding requirements or where the Contract is an emergency procurement.

5.4.4 Section 24-163 of the Administrative Code. The Contractor shall comply with Section 24-163 of the Administrative Code related to the idling of the engines of motor vehicles while parking.

5.4.5 Compliance

5.4.5(a) The Contractor's compliance with Article 5.4 may be independently monitored. If it is determined that the Contractor has failed to comply with any provision of Article 5.4, any costs associated with any independent monitoring incurred by the City shall be reimbursed by the Contractor.

5.4.5(b) Any Contractor who violates any provision of Article 5.4, except as provided in Article 5.4.5(c) below, shall be liable for a civil penalty between the amounts of one thousand (\$1,000) and ten thousand (\$10,000) dollars, in addition to twice the amount of money saved by such Contractor for failure to comply with Article 5.4.

5.4.5(c) No Contractor shall make a false claim with respect to the provisions of Article 5.4 to a City Agency. Where a Contractor has been found to have done so, such Contractor shall be liable for a civil penalty of twenty thousand (\$20,000) dollars, in addition to twice the amount of money saved by such Contractor in association with having made such false claim.

5.4.6 Reporting

5.4.6(a) For all Public Works Contracts covered by this Article 5.4, the Contractor shall report to the City Agency the following information:

5.4.6(a)(i) The total number of diesel-powered Nonroad Vehicles used to fulfill the requirements of this Public Works Contract;

5.4.6(a)(ii) The number of such Nonroad Vehicles that were powered by Ultra Low Sulfur Diesel Fuel;

5.4.6(a)(iii) The number of such Nonroad Vehicles that utilized the best available technology for reducing the emission of pollutants, including a breakdown by vehicle model and the type of technology;

5.4.6(a)(iv) The number of such Nonroad Vehicles that utilized such other authorized technology in accordance with Article 5.4.3, including a breakdown by vehicle model and the type of technology used for each such vehicle;

5.4.6(a)(v) The locations where such Nonroad Vehicles were used; and

5.4.6(a)(vi) Where a determination is in effect pursuant to Article 5.4.2(b) or 5.4.2(c), detailed information concerning the Contractor's efforts to obtain Ultra Low Sulfur Diesel Fuel or diesel fuel that has a sulfur content of no more than thirty parts per million (30 ppm).

5.4.6(b) The Contractor shall submit the information required by Article 5.4.6(a) at the completion of Work under the Public Works Contract and on a yearly basis no later than August 1 throughout the term of the Public Works Contract. The yearly report shall cover Work performed during the preceding fiscal year (July 1 - June 30).

5.5 Ultra Low Sulfur Diesel Fuel. In accordance with the Coordinated Construction Act for Lower Manhattan, as amended:

5.5.1 Definitions. For purposes of this Article 5.5, the following definitions apply:

5.5.1(a) "Lower Manhattan" means the area to the south of and within the following lines: a line beginning at a point where the United States pierhead line in the Hudson River as it exists now or may be extended would intersect with the southerly line of West Houston Street in the Borough of Manhattan extended, thence easterly along the southerly side of West Houston Street to the southerly side of Houston Street, thence easterly along the southerly side of Houston Street to the southerly side of East Houston Street, thence northeasterly along the southerly side of East Houston Street to the point where it would intersect with the United States pierhead line in the East River as it exists now or may be extended, including tax lots within or immediately adjacent thereto.

5.5.1(b) "Lower Manhattan Redevelopment Project" means any project in Lower Manhattan that is funded in whole or in part with federal or State funding, or any project intended to improve transportation between Lower Manhattan and the two air terminals in the City known as LaGuardia Airport and John F. Kennedy International Airport, or between Lower Manhattan and the air terminal in Newark known as Newark Liberty International Airport, and that is funded in whole or in part with federal funding.

5.5.1(c) "Nonroad Engine" means an internal combustion engine (including the fuel system) that is not used in a Motor Vehicle or a vehicle used solely for competition, or that is not subject to standards promulgated under Section 7411 or Section 7521 of Title 42 of the United States Code, except that this term shall apply to internal combustion engines used to power generators, compressors or similar equipment used in any construction program or project.

5.5.1(d) "Nonroad Vehicle" means a vehicle that is powered by a Nonroad Engine, fifty (50) horsepower (HP) and greater, and that is not a Motor Vehicle or a vehicle used solely for competition, which shall include, but not be limited to, excavators, backhoes, cranes, compressors, generators, bulldozers, and similar equipment, except

that this terms shall not apply to horticultural maintenance vehicles used for landscaping purposes that are powered by a Nonroad Engine of sixty-five (65) HP or less and that are not used in any construction program or project.

5.5.1(e) "Ultra Low Sulfur Diesel Fuel" means diesel fuel that has a sulfur content of no more than fifteen parts per million (15 ppm).

5.5.2 Requirements. Contractors and Subcontractors are required to use only Ultra Low Sulfur Diesel Fuel to power the diesel-powered Nonroad Vehicles with engine HP rating of fifty (50) HP and above used on a Lower Manhattan Redevelopment Project and, where practicable, to reduce the emission of pollutants by retrofitting such Nonroad Vehicles with oxidation catalysts, particulate filters, or technology that achieves lowest particulate matter emissions.

5.6 Pesticides. In accordance with Section 17-1209 of the Administrative Code, to the extent that the Contractor or any Subcontractor applies pesticides to any property owned or leased by the City, the Contractor, and any Subcontractor shall comply with Chapter 12 of the Administrative Code.

5.7 Waste Treatment, Storage, and Disposal Facilities and Transporters. In connection with the Work, the Contractor and any Subcontractor shall use only those waste treatment, storage, and disposal facilities and waste transporters that possess the requisite license, permit or other governmental approval necessary to treat, store, dispose, or transport the waste, materials or hazardous substances.

5.8 Environmentally Preferable Purchasing. The Contractor shall ensure that products purchased or leased by the Contractor or any Subcontractor for the Work that are not specified by the City or are submitted as equivalents to a product specified by the City comply with the requirements of the New York City Environmentally Preferable Purchasing Program contained in Chapter 11 of Title 43 of the RCNY, pursuant to Chapter 3 of Title 6 of the Administrative Code.

ARTICLE 6. INSPECTION

6.1 During the progress of the Work and up to the date of Final Acceptance, the Contractor shall at all times afford the representatives of the City every reasonable, safe, and proper facility for inspecting all Work done or being done at the Site and also for inspecting the manufacture or preparation of materials and equipment at the place of such manufacture or preparation.

6.2 The Contractor's obligation hereunder shall include the uncovering or taking down of finished Work and its restoration thereafter; provided, however, that the order to uncover, take down and restore shall be in writing, and further provided that if Work thus exposed proves satisfactory, and if the Contractor has complied with Article 6.1, such uncovering or taking down and restoration shall be considered an item of Extra Work to be paid for in accordance with the provisions of Article 26. If the Work thus exposed proves unsatisfactory, the City has no obligation to compensate the Contractor for the uncovering, taking down or restoration.

6.3 Inspection and approval by the Commissioner, the Engineer, Project Manager, or Resident Engineer, of finished Work or of Work being performed, or of materials and equipment at the place of manufacture or preparation, shall not relieve the Contractor of its obligation to perform the Work in strict accordance with the Contract. Finished or unfinished Work not found to be in strict accordance with the Contract shall be replaced as directed by the Engineer, even though such Work may have been previously approved and paid for. Such corrective Work is Contract Work and shall not be deemed Extra Work.

6.4 Rejected Work and materials shall be promptly taken down and removed from the Site, which must at all times be kept in a reasonably clean and neat condition.

**ARTICLE 7. PROTECTION OF WORK AND OF PERSONS
AND PROPERTY; NOTICES AND INDEMNIFICATION**

7.1 During the performance of the Work and up to the date of Final Acceptance, the Contractor shall be under an absolute obligation to protect the finished and unfinished Work against any damage, loss, injury, theft and/or vandalism and in the event of such damage, loss, injury, theft and/or vandalism, it shall promptly replace and/or repair such Work at the Contractor's sole cost and expense, as directed by the Resident Engineer. The obligation to deliver finished Work in strict accordance with the Contract prior to Final Acceptance shall be absolute and shall not be affected by the Resident Engineer's approval of, or failure to prohibit, the Means and Methods of Construction used by the Contractor.

7.2 During the performance of the Work and up to the date of Final Acceptance, the Contractor shall take all reasonable precautions to protect all persons and the property of the City and of others from damage, loss or injury resulting from the Contractor's, and/or its Subcontractors' operations under this Contract. The Contractor's obligation to protect shall include the duty to provide, place or replace, and adequately maintain at or about the Site suitable and sufficient protection such as lights, barricades, and enclosures.

7.3 The Contractor shall comply with the notification requirements set forth below in the event of any loss, damage or injury to Work, persons or property, or any accidents arising out of the operations of the Contractor and/or its Subcontractors under this Contract.

7.3.1 The Contractor shall make a full and complete report in writing to the Resident Engineer within three (3) Days after the occurrence.

7.3.2 The Contractor shall also send written notice of any such event to all insurance carriers that issued potentially responsive policies (including commercial general liability insurance carriers for events relating to the Contractor's own employees) no later than twenty (20) days after such event and again no later than twenty (20) days after the initiation of any claim and/or action resulting therefrom. Such notice shall contain the following information: the number of the insurance policy, the name of the Named Insured, the date and location of the incident, and the identity of the persons injured or property damaged. For any policy on which the City and/or the Engineer, Architect, or Project Manager are Additional Insureds, such notice shall expressly specify that "this notice is being given on behalf of the City of New York as Additional Insured, such other Additional Insureds, as well as the Named Insured."

7.3.2(a) Whenever such notice is sent under a policy on which the City is an Additional Insured, the Contractor shall provide copies of the notice to the Comptroller, the Commissioner and the City Corporation Counsel. The copy to the Comptroller shall be sent to the Insurance Unit, NYC Comptroller's Office, 1 Centre Street - Room 1222, New York, New York, 10007. The copy to the Commissioner shall be sent to the address set forth in Schedule A of the General Conditions. The copy to the City Corporation Counsel shall be sent to Insurance Claims Specialist, Affirmative Litigation Division, New York City Law Department, 100 Church Street, New York, New York 10007.

7.3.2(b) If the Contractor fails to provide any of the foregoing notices to any appropriate insurance carrier(s) in a timely and complete manner, the Contractor shall indemnify the City for all losses, judgments, settlements, and expenses, including reasonable attorneys' fees, arising from an insurer's disclaimer of coverage citing late notice by or on behalf of the City.

7.4 To the fullest extent permitted by law, the Contractor shall defend, indemnify, and hold the City, its employees, and officials (the "Indemnitees") harmless against any and all claims (including but not limited to claims asserted by any employee of the Contractor and/or its Subcontractors) and costs and expenses of whatever kind (including but not limited to payment or reimbursement of attorneys' fees and disbursements) allegedly arising out of or in any way related to the operations of the Contractor and/or its Subcontractors in the performance of this Contract or from the Contractor's and/or its Subcontractors' failure to comply with any of the provisions of this Contract or of the Law. Such costs and expenses shall include all those incurred in defending the underlying claim and those incurred in connection with the enforcement of this Article 7.4 by way of cross-claim, third-party claim, declaratory action or otherwise. The parties expressly agree that the indemnification obligation hereunder contemplates (1) full indemnity in the event of liability imposed against the Indemnitees without negligence and solely by reason of statute, operation of Law or otherwise; and (2) partial indemnity in the event of any actual negligence on the part of the Indemnitees either causing or contributing to the underlying claim (in which case, indemnification will be limited to any liability imposed over and above that percentage attributable to actual fault whether by statute, by operation of Law, or otherwise). Where partial indemnity is provided hereunder, all costs and expenses shall be indemnified on a pro rata basis.

7.4.1 Indemnification under Article 7.4 or any other provision of the Contract shall operate whether or not Contractor or its Subcontractors have placed and maintained the insurance specified under Article 22.

7.5 The provisions of this Article 7 shall not be deemed to create any new right of action in favor of third parties against the Contractor or the City.

CHAPTER III TIME PROVISIONS

ARTICLE 8. COMMENCEMENT AND PROSECUTION OF THE WORK

8.1 The Contractor shall commence the Work on the date specified in the Notice to Proceed or the Order to Work. The time for performance of the Work under the Contract shall be computed from the date specified in the Notice to Proceed or the Order to Work. **TIME BEING OF THE ESSENCE** to the City, the Contractor shall thereafter prosecute the Work diligently, using such Means and Methods of Construction as are in accord with Article 4 herein and as will assure its completion not later than the date specified in this Contract, or on the date to which the time for completion may be extended.

ARTICLE 9. PROGRESS SCHEDULES

9.1 To enable the Work to be performed in an orderly and expeditious manner, the Contractor, within fifteen (15) Days after the Notice to Proceed or Order to Work, unless otherwise directed by the Engineer, shall submit to the Engineer a proposed progress schedule based on the Critical Path Method in the form of a bar graph or in such other form as specified by the Engineer, and monthly cash flow requirements, showing:

9.1.1 The anticipated time of commencement and completion of each of the various operations to be performed under this Contract; and

9.1.2 The sequence and interrelation of each of these operations with the others and with those of other related contracts; and

9.1.3 The estimated time required for fabrication or delivery, or both, of all materials and equipment required for the Work, including the anticipated time for obtaining required approvals pursuant to Article 10; and

9.1.4 The estimated amount in dollars the Contractor will claim on a monthly basis.

9.2 The proposed schedule shall be revised as directed by the Engineer, until finally approved by the Engineer, and after such approval, subject to the provisions of Article 11, shall be strictly adhered to by the Contractor.

9.3 If the Contractor shall fail to adhere to the approved progress schedule, or to the schedule as revised pursuant to Article 11, it shall promptly adopt such other or additional Means and Methods of Construction, at its sole cost and expense, as will make up for the time lost and will assure completion in accordance with the approved progress schedule. The approval by the City of a progress schedule which is shorter than the time allotted under the Contract shall not create any liability for the City if the approved progress schedule is not met.

9.4 The Contractor will not receive any payments until the proposed progress schedule is submitted.

ARTICLE 10. REQUESTS FOR INFORMATION OR APPROVAL

10.1 From time to time as the Work progresses and in the sequence indicated by the approved progress schedule, the Contractor shall submit to the Engineer a specific request in writing for each item of information or approval required by the Contractor. These requests shall state the latest date upon which the information or approval is actually required by the Contractor, and shall be submitted in a reasonable time in advance thereof to provide the Engineer a sufficient time to act upon such submissions, or any necessary re-submissions thereof.

10.2 The Contractor shall not have any right to an extension of time on account of delays due to the Contractor's failure to submit requests for the required information or the required approval in accordance with the above requirements.

ARTICLE 11. NOTICE OF CONDITIONS CAUSING DELAY AND DOCUMENTATION OF DAMAGES CAUSED BY DELAY

11.1 After the commencement of any condition which is causing or may cause a delay in completion of the Work, including conditions for which the Contractor may be entitled to an extension of time, the following notifications and submittals are required:

11.1.1 Within seven (7) Days after the commencement of such condition, the Contractor must notify the Engineer in writing of the existence, nature and effect of such condition upon the approved progress schedule and the Work, and must state why and in what respects, if any, the condition is causing or may cause a delay.

11.1.2 If the Contractor shall claim to be sustaining damages for delay as provided for in this Article 11, within forty-five (45) Days from the time such damages are first incurred, and every thirty (30) Days thereafter for as long as such damages are being incurred, the Contractor shall submit to the Commissioner verified written statements of the details and the amounts of such damages, together with documentary evidence of such damages, ("statement of delay damages") as further detailed in Article 11.6. The Contractor may submit any of the above statements within such additional time as may be granted by the Commissioner in writing upon written request therefor. On failure of the Contractor to strictly comply with all of the foregoing provisions, such claims shall be deemed waived and no right to recover on such claims shall exist. Damages that the Contractor may claim in any action arising under or by reason of this Contract shall not be different from or in excess of the statements made and documentation provided pursuant to this Article 11.

11.1.3 Within 60 days of submission of the final verified statement of claims pursuant to Article 44, the Commissioner shall make a determination as to whether a compensable delay has occurred and, if so, the amount of compensation due the Contractor. Notwithstanding the above, the Commissioner may make a determination as to whether a compensable delay has occurred at any time after the Contractor's first submission of a statement of delay damages provided, however, that the amount of compensation due to the Contractor will not be determined until the Commissioner determines that the Work is delayed after the date set for substantial completion.

11.2 Failure of the Contractor to strictly comply with the requirements of Article 11.1.1 may, in the discretion of the Commissioner, be deemed sufficient cause to deny any extension of time on account of delay arising out of such condition. Failure of the Contractor to strictly comply with the requirements of Articles 11.1.1 and 11.1.2 shall be deemed a conclusive waiver by the Contractor of any and all claims for damages for delay arising from such condition and no right to recover on such claims shall exist.

11.3 When appropriate and directed by the Engineer, the progress schedule shall be revised by the Contractor until finally approved by the Engineer. The revised progress schedule must be strictly adhered to by the Contractor.

11.4 Compensable Delays

11.4.1 The Contractor agrees to make claim only for additional costs attributable to delay in the performance of this Contract necessarily extending the time for completion of the Work or resulting from acceleration directed by the Commissioner and required to maintain the Project schedule, occasioned solely by any act or omission to act of the City listed below. The Contractor also agrees that delay from any other cause shall be compensated, if at all, solely by an extension of time to complete the performance of the Work.

11.4.1.1 The failure of the City to take reasonable measures to coordinate and progress the Work, except that the City shall not be responsible for the Contractor's obligation to coordinate and progress the Work of its Subcontractors.

11.4.1.2 Extended delays attributable to the City in the review or issuance of change orders, in shop drawing reviews and approvals or as a result of the cumulative impact of multiple change orders, which have a verifiable impact on Project costs.

11.4.1.3 The unavailability of the Site for an extended period of time that significantly affects the scheduled completion of the Contract.

- 11.4.1.4 The issuance by the Engineer of a stop work order relative to a substantial portion of the Work for a period exceeding thirty (30) Days, that was not brought about through any action or omission of the Contractor.
- 11.4.1.5 Differing site conditions that were neither known nor reasonably ascertainable on a pre-bid inspection of the Site or review of the bid documents or other publicly available sources, and that are not ordinarily encountered in the Project's geographical area or neighborhood or in the type of Work to be performed.
- 11.4.1.6 Delays caused by the City's bad faith or its willful, malicious, or grossly negligent conduct;
- 11.4.1.7 Delays not contemplated by the parties;
- 11.4.1.8 Delays so unreasonable that they constitute an intentional abandonment of the Contract by the City; and
- 11.4.1.9 Delays resulting from the City's breach of a fundamental obligation of the Contract.

11.4.2 No claim may be made for any alleged delay in Substantial Completion of the Work by a date earlier than the date of Substantial Completion provided for in Schedule A unless there is a provision in the Contract providing for additional compensation for early completion. No claim may be made for any alleged delay in Substantial Completion of the Work if the work is substantially completed by the date of Substantial Completion provided for in Schedule A unless acceleration has been directed by the Commissioner to meet the date of Substantial Completion set forth in Schedule A.

11.4.3 The provisions of this Article 11 apply only to claims for additional costs attributable to delay and do not preclude determinations by the Commissioner allowing reimbursements for additional costs for Extra Work pursuant to Articles 25 and 26 of this Contract. To the extent that any cost attributable to delay is reimbursed as part of a change order, no additional claim for compensation under this Article 11 shall be allowed.

11.5 Non-Compensable Delays. The Contractor agrees to make no claim for, and is deemed to have included in its bid prices for the various items of the Contract, the extra/additional costs attributable to any delays caused by or attributable to the items set forth below. For such items, the Contractor shall be compensated, if at all, solely by an extension of time to complete the performance of the Work, in accordance with the provisions of Article 13. Such extensions of time will be granted, if at all, pursuant to the grounds set forth in Article 13.3.

11.5.1 The acts or omissions of any third parties, including but not limited to Other Contractors, public/ governmental bodies (other than City Agencies), utilities or private enterprises, who are disclosed in the Contract Documents or are ordinarily encountered or generally recognized as related to the Work;

11.5.2 Any situation which was within the contemplation of the parties at the time of entering into the Contract, including any delay indicated or disclosed in the Contract Documents or generally recognized as related to the nature of the Work, and/or the existence of any facility or appurtenance owned, operated or maintained by any third party, as indicated or disclosed in the Contract Documents or ordinarily encountered or generally recognized as related to the nature of the Work;

11.5.3 Restraining orders, injunctions or judgments issued by a court which were caused by a Contractor's submission, action or inaction or by a Contractor's Means and Methods of

Construction, or by third parties, unless such order, injunction or judgment was the result of an action or omission by the City;

11.5.4 Any labor boycott, strike, picketing, lockout or similar situation;

11.5.5 Any shortages of supplies or materials, or unavailability of equipment, required by the Contract Work;

11.5.6 Climatic conditions, storms, floods, droughts, tidal waves, fires, hurricanes, earthquakes, landslides or other catastrophes or acts of God, or acts of war or of the public enemy or terrorist acts, including the City's reasonable responses thereto; and

11.5.7 Extra Work which does not significantly affect the overall completion of the Contract, reasonable delays in the review or issuance of change orders or field orders and/or in shop drawing reviews or approvals.

11.6 Required Content of Submission of Statement of Delay Damages

11.6.1 In the verified written statement of delay damages required by Article 11.1.2, the following information shall be provided by the Contractor:

11.6.1.1 For each delay, the start and end dates of the claimed periods of delay and, in addition, a description of the operations that were delayed, an explanation of how they were delayed, and the reasons for the delay, including identifying the applicable act or omission of the City listed in Article 11.4.

11.6.1.2 A detailed factual statement of the claim providing all necessary dates, locations and items of Work affected by the claim.

11.6.1.3 The amount of additional compensation sought and a breakdown of that amount into categories as described in Article 26.2, subject to the limitations set forth in Article 11.7.

11.6.1.4 Any additional information requested by the Commissioner.

11.7 Recoverable Costs

11.7.1 Delay damages may be recoverable for the following costs actually and necessarily incurred in the performance of the Work:

11.7.1.1 Direct labor, including payroll taxes (subject to statutory wage caps) and supplemental benefits, based on time and materials records;

11.7.1.2 Necessary materials (including transportation to the Site), based on time and material records;

11.7.1.3 Reasonable rental value of necessary plant and equipment other than small tools, plus fuel/energy costs according to the applicable formula set forth in Articles 26.2.4 and/or 26.2.8, based on time and material records;

11.7.1.4 Insurance and bond costs;

11.7.1.5 Extended field office costs;

11.7.1.6 Extended Site overhead; and

11.7.1.7 Extended home office overhead.

11.7.2 Recoverable Subcontractor Costs. When the Work is performed by a Subcontractor, the Contractor may be paid the actual and necessary costs of such subcontracted Work as outlined above in Articles 11.7.1.1 through 11.7.1.6, and an

additional overhead of five (5%) percent of the costs outlined in Articles 11.7.1.1 through 11.7.1.3.

11.7.3 Non-Recoverable Costs. The parties agree that the City will have no liability for the following items and the Contractor agrees it shall make no claim for the following items:

- 11.7.3.1 Profit, or loss of anticipated or unanticipated profit;
- 11.7.3.2 Consequential damages, including but not limited to interest on monies in dispute, including interest which is paid on such monies, loss of bonding capacity, bidding opportunities, or interest in investment, or any resulting insolvency;
- 11.7.3.3 Indirect costs or expenses of any nature;
- 11.7.3.4 Direct or indirect costs attributable to performance of Work where the Contractor, because of situations or conditions within its control, has not progressed the Work in a satisfactory manner; and
- 11.7.3.5 Attorneys' fees and dispute and claims preparation expenses.

11.8 Determinations under this Article 11 are not subject to the jurisdiction of the Contract Dispute Resolution Board pursuant to the dispute resolution process set forth in Article 27.

11.9 If the parties agree, pursuant to Article 11.1.3 above, that a compensable delay has occurred and agree on the amount of compensation, payment may be made pursuant to a written change order. Payment pursuant to such change order is subject to pre-audit by the Engineering Audit Officer, and may be post-audited by the Comptroller and/or the Agency.

ARTICLE 12. COORDINATION WITH OTHER CONTRACTORS

12.1 During the progress of the Work, Other Contractors may be engaged in performing other work or may be awarded other contracts for additional work on this Project. In that event, the Contractor shall coordinate the Work to be done hereunder with the work of such Other Contractors and the Contractor shall fully cooperate with such Other Contractors and carefully fit its own Work to that provided under other contracts as may be directed by the Engineer. The Contractor shall not commit or permit any act which will interfere with the performance of work by any Other Contractors.

12.2 If the Engineer determines that the Contractor is failing to coordinate its Work with the work of Other Contractors as the Engineer has directed, then the Commissioner shall have the right to withhold any payments otherwise due hereunder until the Contractor completely complies with the Engineer's directions.

12.3 The Contractor shall notify the Engineer in writing if any Other Contractor on this Project is failing to coordinate its work with the Work of this Contract. If the Engineer finds such charges to be true, the Engineer shall promptly issue such directions to the Other Contractor with respect thereto as the situation may require. The City shall not, however, be liable for any damages suffered by any Other Contractor's failure to coordinate its work with the Work of this Contract or by reason of the Other Contractor's failure to promptly comply with the directions so issued by the Engineer, or by reason of any Other Contractor's default in performance, it being understood that the City does not guarantee the responsibility or continued efficiency of any contractor. The Contractor agrees to make no claim against

the City for any damages relating to or arising out of any directions issued by the Engineer pursuant to this Article 12 (including but not limited to the failure of any Other Contractor to comply or promptly comply with such directions), or the failure of the Engineer to issue any directions, or the failure of any Other Contractor to coordinate its work, or the default in performance of any Other Contractor.

12.4 The Contractor shall indemnify and hold the City harmless from any and all claims or judgments for damages and from costs and expenses to which the City may be subjected or which it may suffer or incur by reason of the Contractor's failure to comply with the Engineer's directions promptly; and the Comptroller shall have the right to exercise the powers reserved in Article 23 with respect to any claims which may be made for damages due to the Contractor's failure to comply with the Engineer's directions promptly. Insofar as the facts and Law relating to any claim would preclude the City from being completely indemnified by the Contractor, the City shall be partially indemnified by the Contractor to the fullest extent provided by Law.

12.5 Should the Contractor sustain any damage through any act or omission of any Other Contractor having a contract with the City for the performance of work upon the Site or of work which may be necessary to be performed for the proper prosecution of the Work to be performed hereunder, or through any act or omission of a subcontractor of such Other Contractor, the Contractor shall have no claim against the City for such damage, but shall have a right to recover such damage from the Other Contractor under the provision similar to the following provisions which apply to this Contract and have been or will be inserted in the contracts with such Other Contractors:

12.5.1 Should any Other Contractor having or who shall hereafter have a contract with the City for the performance of work upon the Site sustain any damage through any act or omission of the Contractor hereunder or through any act or omission of any Subcontractor of the Contractor, the Contractor agrees to reimburse such Other Contractor for all such damages and to defend at its own expense any action based upon such claim and if any judgment or claim (even if the allegations of the action are without merit) against the City shall be allowed the Contractor shall pay or satisfy such judgment or claim and pay all costs and expenses in connection therewith and agrees to indemnify and hold the City harmless from all such claims. Insofar as the facts and Law relating to any claim would preclude the City from being completely indemnified by the Contractor, the City shall be partially indemnified by the Contractor to the fullest extent provided by Law.

12.6 The City's right to indemnification hereunder shall in no way be diminished, waived or discharged by its recourse to assessment of liquidated damages as provided in Article 15, or by the exercise of any other remedy provided for by Contract or by Law.

ARTICLE 13. EXTENSION OF TIME FOR PERFORMANCE

13.1 If performance by the Contractor is delayed for a reason set forth in Article 13.3, the Contractor may be allowed a reasonable extension of time in conformance with this Article 13 and the PPB Rules.

13.2 Any extension of time may be granted only by the ACCO or by the Board for the Extension of Time (hereafter "Board") (as set forth below) upon written application by the Contractor.

13.3 Grounds for Extension: If such application is made, the Contractor shall be entitled to an extension of time for delay in completion of the Work caused solely:

13.3.1 By the acts or omissions of the City, its officials, agents or employees; or

13.3.2 By the act or omissions of Other Contractors on this Project; or

13.3.3 By supervening conditions entirely beyond the control of either party hereto (such as, but not limited to, acts of God or the public enemy, excessive inclement weather, war or other national emergency making performance temporarily impossible or illegal, or strikes or labor disputes not brought about by any act or omission of the Contractor).

13.3.4 The Contractor shall, however, be entitled to an extension of time for such causes only for the number of Days of delay which the ACCO or the Board may determine to be due solely to such causes, and then only if the Contractor shall have strictly complied with all of the requirements of Articles 9 and 10.

13.4 The Contractor shall not be entitled to receive a separate extension of time for each of several causes of delay operating concurrently, but, if at all, only for the actual period of delay in completion of the Work as determined by the ACCO or the Board, irrespective of the number of causes contributing to produce such delay. If one of several causes of delay operating concurrently results from any act, fault or omission of the Contractor or of its Subcontractors or Materialmen, and would of itself (irrespective of the concurrent causes) have delayed the Work, no extension of time will be allowed for the period of delay resulting from such act, fault or omission.

13.5 The determination made by the ACCO or the Board on an application for an extension of time shall be binding and conclusive on the Contractor.

13.6 The ACCO or the Board acting entirely within their discretion may grant an application for an extension of time for causes of delay other than those herein referred.

13.7 Permitting the Contractor to continue with the Work after the time fixed for its completion has expired, or after the time to which such completion may have been extended has expired, or the making of any payment to the Contractor after such time, shall in no way operate as a waiver on the part of the City of any of its rights under this Contract.

13.8 Application for Extension of Time:

13.8.1 Before the Contractor's time extension request will be considered, the Contractor shall notify the ACCO of the condition which allegedly has caused or is causing the delay, and shall submit a written application to the ACCO identifying:

13.8.1(a) The Contractor; the registration number; and Project description;

13.8.1(b) Liquidated damage assessment rate, as specified in the Contract;

13.8.1(c) Original total bid price;

13.8.1(d) The original Contract start date and completion date;

13.8.1(e) Any previous time extensions granted (number and duration); and

13.8.1(f) The extension of time requested.

13.8.2 In addition, the application for extension of time shall set forth in detail:

13.8.2(a) The nature of each alleged cause of delay in completing the Work;

13.8.2(b) The date upon which each such cause of delay began and ended and the number of Days attributable to each such cause;

13.8.2(c) A statement that the Contractor waives all claims except for those delineated in the application, and the particulars of any claims which the Contractor does not agree to waive. For time extensions for Substantial Completion and final completion payments, the application shall include a detailed statement of the dollar amounts of each element of claim item reserved; and

13.8.2(d) A statement indicating the Contractor's understanding that the time extension is granted only for purposes of permitting continuation of Contract performance and payment for Work performed and that the City retains its right to conduct an investigation and assess liquidated damages as appropriate in the future.

13.9 Analysis and Approval of Time Extensions:

13.9.1 For time extensions for partial payments, a written determination shall be made by the ACCO who may, for good and sufficient cause, extend the time for the performance of the Contract as follows:

13.9.1(a) If the Work is to be completed within six (6) months, the time for performance may be extended for sixty (60) Days;

13.9.1(b) If the Work is to be completed within less than one (1) year but more than six (6) months, an extension of ninety (90) Days may be granted;

13.9.1(c) If the Contract period exceeds one (1) year, besides the extension granted in Article 13.9.1(b), an additional thirty (30) Days may be granted for each multiple of six (6) months involved beyond the one (1) year period; or

13.9.1(d) If exceptional circumstances exist, the ACCO may extend the time for performance beyond the extensions in Articles 13.9.1(a), 13.9.1(b), and 13.9.1(c). In that event, the ACCO shall file with the Mayor's Office of Contract Services a written explanation of the exceptional circumstances.

13.9.2 For extensions of time for Substantial Completion and final completion payments, the Engineer, in consultation with the ACCO, shall prepare a written analysis of the delay (including a preliminary determination of the causes of delay, the beginning and end dates for each such cause of delay, and whether the delays are excusable under the terms of this Contract). The report shall be subject to review by and approval of the Board, which shall have authority to question its analysis and determinations and request additional facts or documentation. The report as reviewed and made final by the Board shall be made a part of the Agency contract file. Neither the report itself nor anything contained therein shall operate as a waiver or release of any claim the City may have against the Contractor for either actual or liquidated damages.

13.9.3 Approval Mechanism for Time Extensions for Substantial Completion or Final Completion Payments: An extension shall be granted only with the approval of the Board which is comprised of the ACCO of the Agency, the City Corporation Counsel, and the Comptroller, or their authorized representatives.

13.9.4 Neither the granting of any application for an extension of time to the Contractor or any Other Contractor on this Project nor the papers, records or reports related to any application for or grant of an extension of time or determination related thereto shall be referred to or offered in evidence by the Contractor or its attorneys in any action or proceeding.

13.10 No Damage for Delay: The Contractor agrees to make no claim for damages for delay in the performance of this Contract occasioned by any act or omission to act of the City or any of its representatives, except as provided for in Article 11.

ARTICLE 14. COMPLETION AND FINAL ACCEPTANCE OF THE WORK

14.1 Date for Substantial Completion: The Contractor shall substantially complete the Work within the time fixed in Schedule A of the General Conditions, or within the time to which such Substantial Completion may be extended.

14.2 Determining the Date of Substantial Completion: The Work will be deemed to be substantially complete when the two conditions set forth below have been met.

14.2.1 Inspection: The Engineer has inspected the Work and has made a written determination that it is substantially complete.

14.2.2 Approval of Final Approved Punch List and Date for Final Acceptance: Following inspection of the Work, the Engineer shall furnish the Contractor with a final punch list, specifying all items of Work to be completed and proposing dates for the completion of each specified item of Work. The Contractor shall then submit in writing to the Engineer within ten (10) Days of the Engineer furnishing the final punch list either acceptance of the dates or proposed alternative dates for the completion of each specified item of Work. If the Contractor proposes alternative dates, then, within a reasonable time after receipt, the Engineer, in a written notification to the Contractor, shall approve the Contractor's completion dates or, if they are unable to agree, the Engineer shall establish dates for the completion of each item of Work. If the Contractor neither accepts the dates nor proposes alternative dates within ten (10) Days, the schedule proposed by the Engineer shall be deemed accepted. The latest completion date specified shall be the date for Final Acceptance of the Work.

14.3 Date of Substantial Completion. The date of approval of the Final Approved Punch List, shall be the date of Substantial Completion. The date of approval of the Final Approved Punch List shall be either (a) if the Contractor approves the final punch list and proposed dates for completion furnished by the Engineer, the date of the Contractor's approval; or (b) if the Contractor neither accepts the dates nor proposes alternative dates, ten (10) Days after the Engineer furnishes the Contractor with a final punch list and proposed dates for completion; or (c) if the Contractor proposes alternative dates, the date that the Engineer sends written notification to the Contractor either approving the Contractor's proposed alternative dates or establishing dates for the completion for each item of Work.

14.4 Determining the Date of Final Acceptance: The Work will be accepted as final and complete as of the date of the Engineer's inspection if, upon such inspection, the Engineer finds that all items on the Final Approved Punch List are complete and no further Work remains to be done. The Commissioner will then issue a written determination of Final Acceptance.

14.5 Request for Inspection: Inspection of the Work by the Engineer for the purpose of Substantial Completion or Final Acceptance shall be made within ten (10) Days after receipt of the Contractor's written request therefor.

14.6 Request for Re-inspection: If upon inspection for the purpose of Substantial Completion or Final Acceptance, the Engineer determines that there are items of Work still to be performed, the Contractor shall promptly perform them and then request a re-inspection. If upon re-inspection, the Engineer determines that the Work is substantially complete or finally accepted, the date of such re-inspection shall be the date of Substantial Completion or Final Acceptance. Re-inspection by the Engineer shall be made within ten (10) Days after receipt of the Contractor's written request therefor.

14.7 Initiation of Inspection by the Engineer: If the Contractor does not request inspection or re-inspection of the Work for the purpose of Substantial Completion or Final Acceptance, the Engineer may initiate such inspection or re-inspection.

ARTICLE 15. LIQUIDATED DAMAGES

15.1 In the event the Contractor fails to substantially complete the Work within the time fixed for such Substantial Completion in Schedule A of the General Conditions, plus authorized time extensions, or if the Contractor, in the sole determination of the Commissioner, has abandoned the Work, the Contractor shall pay to the City the sum fixed in Schedule A of the General Conditions, for each and every Day that the time consumed in substantially completing the Work exceeds the time allowed therefor; which said sum, in view of the difficulty of accurately ascertaining the loss which the City will suffer by reason of delay in the Substantial Completion of the Work hereunder, is hereby fixed and agreed as the liquidated damages that the City will suffer by reason of such delay, and not as a penalty. This Article 15 shall also apply to the Contractor whether or not the Contractor is defaulted pursuant to Chapter X of this Contract. Neither the failure to assess liquidated damages nor the granting of any time extension shall operate as a waiver or release of any claim the City may have against the Contractor for either actual or liquidated damages.

15.2 Liquidated damages received hereunder are not intended to be nor shall they be treated as either a partial or full waiver or discharge of the City's right to indemnification, or the Contractor's obligation to indemnify the City, or to any other remedy provided for in this Contract or by Law.

15.3 The Commissioner may deduct and retain out of the monies which may become due hereunder, the amount of any such liquidated damages; and in case the amount which may become due hereunder shall be less than the amount of liquidated damages suffered by the City, the Contractor shall be liable to pay the difference.

ARTICLE 16. OCCUPATION OR USE PRIOR TO COMPLETION

16.1 Unless otherwise provided for in the Specifications, the Commissioner may take over, use, occupy or operate any part of the Work at any time prior to Final Acceptance, upon written notification to the Contractor. The Engineer shall inspect the part of the Work to be taken over, used, occupied, or operated, and will furnish the Contractor with a written statement of the Work, if any, which remains to be performed on such part. The Contractor shall not object to, nor interfere with, the Commissioner's decision to exercise the rights granted by Article 16. In the event the Commissioner takes over, uses, occupies, or operates any part of the Work:

16.1.1 the Engineer shall issue a written determination of Substantial Completion with respect to such part of the Work;

16.1.2 the Contractor shall be relieved of its absolute obligation to protect such part of the unfinished Work in accordance with Article 7;

16.1.3 the Contractor's guarantee on such part of the Work shall begin on the date of such use by the City; and;

16.1.4 the Contractor shall be entitled to a return of so much of the amount retained in accordance with Article 21 as it relates to such part of the Work, except so much thereof as may be retained under Articles 24 and 44.

CHAPTER IV SUBCONTRACTS AND ASSIGNMENTS

ARTICLE 17. SUBCONTRACTS

17.1 The Contractor shall not make subcontracts totaling an amount more than the percentage of the total Contract price fixed in Schedule A of the General Conditions, without prior written permission from the Commissioner. All subcontracts made by the Contractor shall be in writing. No Work may be performed by a Subcontractor prior to the Contractor entering into a written subcontract with the Subcontractor and complying with the provisions of this Article 17.

17.2 Before making any subcontracts, the Contractor shall submit a written statement to the Commissioner giving the name and address of the proposed Subcontractor; the portion of the Work and materials which it is to perform and furnish; the cost of the subcontract; the VENDEX questionnaire if required; the proposed subcontract if requested by the Commissioner; and any other information tending to prove that the proposed Subcontractor has the necessary facilities, skill, integrity, past experience, and financial resources to perform the Work in accordance with the terms and conditions of this Contract.

17.3 In addition to the requirements in Article 17.2, Contractor is required to list the Subcontractor in the web based Subcontractor Reporting System through the City's Payee Information Portal (PIP), available at www.nyc.gov/pip.¹ For each Subcontractor listed, Contractor is required to provide the following information: maximum contract value, description of Subcontractor's Work, start and end date of the subcontract and identification of the Subcontractor's industry. Thereafter, Contractor will be required to report in the system the payments made to each Subcontractor within 30 days of making the payment. If any of the required information changes throughout the Term of the Contract, Contractor will be required to revise the information in the system.

Failure of the Contractor to list a Subcontractor and/or to report Subcontractor payments in a timely fashion may result in the Commissioner declaring the Contractor in default of the Contract and will subject Contractor to liquidated damages in the amount of \$100 per day for each day that the Contractor fails to identify a Subcontractor along with the required information about the Subcontractor and/or fails to report payments to a Subcontractor, beyond the time frames set forth herein or in the notice from the City. Article 15 shall govern the issue of liquidated damages.

¹ In order to use the new system, a PIP account will be required. Detailed instructions on creating a PIP account and using the new system are also available at www.nyc.gov/pip. Additional assistance with PIP may be obtained by emailing the Financial Information Services Agency Help Desk at pip@fisa.nyc.gov.

17.4 If an approved Subcontractor elects to subcontract any portion of its subcontract, the proposed sub-subcontract shall be submitted in the same manner as directed above.

17.5 The Commissioner will notify the Contractor in writing whether the proposed Subcontractor is approved. If the proposed Subcontractor is not approved, the Contractor may submit another proposed Subcontractor unless the Contractor decides to do the Work. No Subcontractor shall be permitted to enter or perform any work on the Site unless approved.

17.6 Before entering into any subcontract hereunder, the Contractor shall provide the proposed Subcontractor with a complete copy of this document and inform the proposed Subcontractor fully and completely of all provisions and requirements of this Contract relating either directly or indirectly to the Work to be performed and the materials to be furnished under such subcontract, and every such Subcontractor shall expressly stipulate that all labor performed and materials furnished by the Subcontractor shall strictly comply with the requirements of this Contract.

17.7 Documents given to a prospective Subcontractor for the purpose of soliciting the Subcontractor's bid shall include either a copy of the bid cover or a separate information sheet setting forth the Project name, the Contract number (if available), the Agency (as noted in Article 2.1.6), and the Project's location.

17.8 The Commissioner's approval of a Subcontractor shall not relieve the Contractor of any of its responsibilities, duties, and liabilities hereunder. The Contractor shall be solely responsible to the City for the acts or defaults of its Subcontractor and of such Subcontractor's officers, agents, and employees, each of whom shall, for this purpose, be deemed to be the agent or employee of the Contractor to the extent of its subcontract.

17.9 If the Subcontractor fails to maintain the necessary facilities, skill, integrity, past experience, and financial resources (other than due to the Contractor's failure to make payments where required) to perform the Work in accordance with the terms and conditions of this Contract, the Contractor shall promptly notify the Commissioner and replace such Subcontractor with a newly approved Subcontractor in accordance with this Article 17.

17.10 The Contractor shall be responsible for ensuring that all Subcontractors performing Work at the Site maintain all insurance required by Law.

17.11 The Contractor shall promptly, upon request, file with the Engineer a conformed copy of the subcontract and its cost. The subcontract shall provide the following:

17.11.1 **Payment to Subcontractors:** The agreement between the Contractor and its Subcontractor shall contain the same terms and conditions as to method of payment for Work, labor, and materials, and as to retained percentages, as are contained in this Contract.

17.11.2 **Prevailing Rate of Wages:** The agreement between the Contractor and its Subcontractor shall include the prevailing wage rates and supplemental benefits to be paid in accordance with Labor Law Section 220.

17.11.3 **Section 6-123 of the Administrative Code:** Pursuant to the requirements of Section 6-123 of the Administrative Code, every agreement between the Contractor and a Subcontractor in excess of fifty thousand (\$50,000) dollars shall include a provision that the Subcontractor shall not engage in any unlawful discriminatory practice as defined in Title VIII of the Administrative Code (Section 8-101 *et seq.*).

17.11.4 All requirements required pursuant to federal and/or state grant agreement(s), if applicable to the Work.

17.12 The Commissioner may deduct from the amounts certified under this Contract to be due to the Contractor, the sum or sums due and owing from the Contractor to the Subcontractors according to the terms of the said subcontracts, and in case of dispute between the Contractor and its Subcontractor, or Subcontractors, as to the amount due and owing, the Commissioner may deduct and withhold from the amounts certified under this Contract to be due to the Contractor such sum or sums as may be claimed by such Subcontractor, or Subcontractors, in a sworn affidavit, to be due and owing until such time as such claim or claims shall have been finally resolved.

17.13 On contracts where performance bonds and payment bonds are executed, the Contractor shall include on each requisition for payment the following data: Subcontractor's name, value of the subcontract, total amount previously paid to Subcontractor for Work previously requisitioned, and the amount, including retainage, to be paid to the Subcontractor for Work included in the requisition.

17.14 On Contracts where performance bonds and payment bonds are not executed, the Contractor shall include with each requisition for payment submitted hereunder, a signed statement from each and every Subcontractor and/or Materialman for whom payment is requested in such requisition. Such signed statement shall be on the letterhead of the Subcontractor and/or Materialman for whom payment is requested and shall (i) verify that such Subcontractor and/or Materialman has been paid in full for all Work performed and/or material supplied to date, exclusive of any amount retained and any amount included on the current requisition, and (ii) state the total amount of retainage to date, exclusive of any amount retained on the current requisition.

ARTICLE 18. ASSIGNMENTS

18.1 The Contractor shall not assign, transfer, convey or otherwise dispose of this Contract, or the right to execute it, or the right, title or interest in or to it or any part thereof, or assign, by power of attorney or otherwise any of the monies due or to become due under this Contract, unless the previous written consent of the Commissioner shall first be obtained thereto, and the giving of any such consent to a particular assignment shall not dispense with the necessity of such consent to any further or other assignments.

18.2 Such assignment, transfer, conveyance or other disposition of this Contract shall not be valid until filed in the office of the Commissioner and the Comptroller, with the written consent of the Commissioner endorsed thereon or attached thereto.

18.3 Failure to obtain the previous written consent of the Commissioner to such an assignment, transfer, conveyance or other disposition, may result in the revocation and annulment of this Contract. The City shall thereupon be relieved and discharged from any further liability to the Contractor, its assignees, transferees or sublessees, who shall forfeit and lose all monies therefor earned under the Contract, except so much as may be required to pay the Contractor's employees.

18.4 The provisions of this clause shall not hinder, prevent, or affect an assignment by the Contractor for the benefit of its creditors made pursuant to the Laws of the State of New York.

18.5 This Contract may be assigned by the City to any corporation, agency or instrumentality having authority to accept such assignment.

**CHAPTER V
CONTRACTOR'S SECURITY AND GUARANTEE**

ARTICLE 19. SECURITY DEPOSIT

19.1 If performance and payment bonds are required, the City shall retain the bid security to ensure that the successful bidder executes the Contract and furnishes the required payment and performance security within ten (10) Days after notice of the award of the Contract. If the successful bidder fails to execute the Contract and furnish the required payment and performance security, the City shall retain such bid security as set forth in the Information for Bidders. If the successful bidder executes the Contract and furnishes the required payment and performance security, the City shall return the bid security within a reasonable time after the furnishing of such bonds and execution of the Contract by the City.

19.2 If performance and payment bonds are not required, the bid security shall be retained by the City as security for the Contractor's faithful performance of the Contract. If partial payments are provided, the bid security will be returned to the Contractor after the sum retained under Article 21 equals the amount of the bid security, subject to other provisions of this Contract. If partial payments are not provided, the bid security will be released when final payment is certified by the City for payment.

19.3 If the Contractor is declared in default under Article 48 prior to the return of the deposit, or if any claim is made such as referred to in Article 23, the amount of such deposit, or so much thereof as the Comptroller may deem necessary, may be retained and then applied by the Comptroller:

19.3.1 To compensate the City for any expense, loss or damage suffered or incurred by reason of or resulting from such default, including the cost of re-letting and liquidated damages; or

19.3.2 To indemnify the City against any and all claims.

ARTICLE 20. PAYMENT GUARANTEE

20.1 On Contracts where one hundred (100%) percent performance bonds and payment bonds are executed, this Article 20 does not apply.

20.2 In the event the terms of this Contract do not require the Contractor to provide a payment bond or where the Contract does not require a payment bond for one hundred (100%) percent of the Contract price, the City shall, in accordance with the terms of this Article 20, guarantee payment of all lawful claims for:

20.2.1 Wages and compensation for labor performed and/or services rendered; and

20.2.2 Materials, equipment, and supplies provided, whether incorporated into the Work or not, when demands have been filed with the City as provided hereinafter by any person, firm, or corporation which furnished labor, material, equipment, supplies, or any combination thereof, in connection with the Work performed hereunder (hereinafter referred to as the "beneficiary") at the direction of the City or the Contractor.

20.3 The provisions of Article 20.2 are subject to the following limitations and conditions:

20.3.1 If the Contractor provides a payment bond for a value that is less than one hundred (100%) percent of the value of the Contract Work, the payment bond provided by the Contractor shall be primary (and non-contributing) to the payment guarantee provided under this Article 20.

20.3.2 The guarantee is made for the benefit of all beneficiaries as defined in Article 20.2 provided that those beneficiaries strictly adhere to the terms and conditions of Article 20.3.4 and 20.3.5.

20.3.3 Nothing in this Article 20 shall prevent a beneficiary providing labor, services or material for the Work from suing the Contractor for any amounts due and owing the beneficiary by the Contractor.

20.3.4 Every person who has furnished labor or material, to the Contractor or to a Subcontractor of the Contractor, in the prosecution of the Work and who has not been paid in full therefor before the expiration of a period of ninety (90) Days after the date on which the last of the labor was performed or material was furnished by him/her for which the claim is made, shall have the right to sue on this payment guarantee in his/her own name for the amount, or the balance thereof, unpaid at the time of commencement of the action; provided, however, that a person having a direct contractual relationship with a Subcontractor of the Contractor but no contractual relationship express or implied with the Contractor shall not have a right of action upon the guarantee unless he/she shall have given written notice to the Contractor within one hundred twenty (120) Days from the date on which the last of the labor was performed or the last of the material was furnished, for which his/her claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the material was furnished or for whom the labor was performed. The notice shall be served by delivering the same personally to the Contractor or by mailing the same by registered mail, postage prepaid, in an envelope addressed to the Contractor at any place where it maintains an office or conducts its business; provided, however, that where such notice is actually received by the Contractor by other means, such notice shall be deemed sufficient.

20.3.5 Except as provided in Labor Law Section 220-g, no action on this payment guarantee shall be commenced after the expiration of the one-year limitations period set forth in Section 137(4)(b) of the State Finance Law.

20.3.6 The Contractor shall promptly forward to the City any notice or demand received pursuant to Article 20.3.4. The Contractor shall inform the City of any defenses to the notice or demand and shall forward to the City any documents the City requests concerning the notice or demand.

20.3.7 All demands made against the City by a beneficiary of this payment guarantee shall be presented to the Engineer along with all written documentation concerning the demand which the Engineer deems reasonably appropriate or necessary, which may include, but shall not be limited to: the subcontract; any invoices presented to the Contractor for payment; the notarized statement of the beneficiary that the demand is due and payable, that a request for payment has been made of the Contractor and that the demand has not been paid by the Contractor within the time allowed for such payment by the subcontract; and copies of any correspondence between the beneficiary and the Contractor concerning such demand. The City shall notify the Contractor that a demand has been made. The Contractor shall inform the City of any defenses to the demand and shall forward to the City any documents the City requests concerning the demand.

20.3.8 The City shall make payment only if, after considering all defenses presented by the Contractor, it determines that the payment is due and owing to the beneficiary making the demand.

20.3.9 No beneficiary shall be entitled to interest from the City, or to any other costs, including, but not limited to, attorneys' fees, except to the extent required by State Finance Law Section 137.

20.4 Upon the receipt by the City of a demand pursuant to this Article 20, the City may withhold from any payment otherwise due and owing to the Contractor under this Contract an amount sufficient to satisfy the demand.

20.4.1 In the event the City determines that the demand is valid, the City shall notify the Contractor of such determination and the amount thereof and direct the Contractor to immediately pay such amount to the beneficiary. In the event the Contractor, within seven (7) Days of receipt of such notification from the City, fails to pay the beneficiary, such failure shall constitute an automatic and irrevocable assignment of payment by the Contractor to the beneficiary for the amount of the demand determined by the City to be valid. The Contractor, without further notification or other process, hereby gives its unconditional consent to such assignment of payment to the beneficiary and authorizes the City, on its behalf, to take all necessary actions to implement such assignment of payment, including without limitation the execution of any instrument or documentation necessary to effectuate such assignment.

20.4.2 In the event that the amount otherwise due and owing to the Contractor by the City is insufficient to satisfy such demand, the City may, at its option, require payment from the Contractor of an amount sufficient to cover such demand and exercise any other right to require or recover payment which the City may have under Law or Contract.

20.4.3 In the event the City determines that the demand is invalid, any amount withheld pending the City's review of such demand shall be paid to the Contractor; provided, however, no lien has been filed. In the event a claim or an action has been filed, the terms and conditions set forth in Article 23 shall apply. In the event a lien has been filed, the parties will be governed by the provisions of the Lien Law of the State of New York.

20.5 The provisions of this Article 20 shall not prevent the City and the Contractor from resolving disputes in accordance with the PPB Rules, where applicable.

20.6 In the event the City determines that the beneficiary is entitled to payment pursuant to this Article 20, such determination and any defenses and counterclaims raised by the Contractor shall be taken into account in evaluating the Contractor's performance.

20.7 Nothing in this Article 20 shall relieve the Contractor of the obligation to pay the claims of all persons with valid and lawful claims against the Contractor relating to the Work.

20.8 The Contractor shall not require any performance, payment or other bonds of any Subcontractor if this Contract does not require such bonds of the Contractor.

20.9 The payment guarantee made pursuant to this Article 20 shall be construed in a manner consistent with Section 137 of the State Finance Law and shall afford to persons furnishing labor or materials to the Contractor or its Subcontractors in the prosecution of the Work under this Contract all of the rights and remedies afforded to such persons by such section, including but not limited to, the right

to commence an action against the City on the payment guarantee provided by this Article 20 within the one-year limitations period set forth in Section 137(4)(b).

ARTICLE 21. RETAINED PERCENTAGE

21.1 If this Contract requires one hundred (100%) percent performance and payment security, then as further security for the faithful performance of this Contract, the Commissioner shall deduct, and retain until the substantial completion of the Work, five (5%) percent of the value of Work certified for payment in each partial payment voucher.

21.2 If this Contract does not require one hundred (100%) percent performance and payment security and if the price for which this Contract was awarded does not exceed one million (\$1,000,000) dollars, then as further security for the faithful performance of this Contract, the Commissioner shall deduct, and retain until the substantial completion of the Work, five (5%) percent of the value of Work certified for payment in each partial payment voucher.

21.3 If this Contract does not require one hundred (100%) percent performance and payment security and if the price for which this Contract was awarded exceeds one million (\$1,000,000) dollars, then as further security for the faithful performance of this Contract, the Commissioner shall deduct, and retain until the substantial completion of the Work, up to ten (10%) percent of the value of Work certified for payment in each partial payment voucher. The percentage to be retained is set forth in Schedule A of the General Conditions.

ARTICLE 22. INSURANCE

22.1 Types of Insurance: The Contractor shall procure and maintain the following types of insurance if, and as indicated, in Schedule A of the General Conditions (with the minimum limits and special conditions specified in Schedule A): Such insurance shall be maintained from the date the Contractor is required to provide Proof of Insurance pursuant to Article 22.3.1 through the date of completion of all required Work (including punch list work as certified in writing by the Resident Engineer), except for insurance required pursuant to Article 22.1.4, which may terminate upon Substantial Completion of the Contract. All insurance shall meet the requirements set forth in this Article 22. Wherever this Article requires that insurance coverage be "at least as broad" as a specified form (including all ISO forms), there is no obligation that the form itself be used, provided that the Contractor can demonstrate that the alternative form or endorsement contained in its policy provides coverage at least as broad as the specified form.

22.1.1 Commercial General Liability Insurance: The Contractor shall provide Commercial General Liability Insurance covering claims for property damage and/or bodily injury, including death, which may arise from any of the operations under this Contract. Coverage under this insurance shall be at least as broad as that provided by the latest edition of Insurance Services Office ("ISO") Form CG 0001. Such insurance shall be "occurrence" based rather than "claims-made" and include, without limitation, the following types of coverage: premises operations; products and completed operations; contractual liability (including the tort liability of another assumed in a contract); broad form property damage; independent contractors; explosion, collapse and underground (XCU); construction means and methods; and incidental malpractice. Such insurance shall contain a "per project" aggregate limit, as specified in Schedule A, that applies separately to operations under this Contract.

22.1.1(a) Such Commercial General Liability Insurance shall name the City as an Additional Insured. Coverage for the City shall specifically include the City's officials and employees, be at least as broad as the latest edition of ISO Form CG 20 10 and provide completed operations coverage at least as broad as the latest edition of ISO Form CG 20 37.

22.1.1(b) Such Commercial General Liability Insurance shall name all other entities designated as additional insureds in Schedule A but only for claims arising from the Contractor's operations under this Contract, with coverage at least as broad as the latest edition of ISO Form CG 20 26.

22.1.1(c) If the Work requires a permit from the Department of Buildings pursuant to 1 RCNY Section 101-08, at http://www.nyc.gov/html/dob/downloads/rules/1_RCNY_101-08.pdf, the Contractor shall provide Commercial General Liability Insurance with limits of at least those required by 1 RCNY section 101-08. If the Work does not require such a permit, the minimum limits shall be those provided for in Schedule A.

22.1.1(d) If any of the Work includes repair of a waterborne vessel owned by or to be delivered to the City, such Commercial General Liability shall include, or be endorsed to include, Ship Repairer's Legal Liability Coverage to protect against, without limitation, liability arising from navigation of such vessels prior to delivery to and acceptance by the City.

22.1.2 Workers' Compensation Insurance, Employers' Liability Insurance, and Disability Benefits Insurance: The Contractor shall provide, and shall cause its Subcontractors to provide, Workers Compensation Insurance, Employers' Liability Insurance, and Disability Benefits Insurance in accordance with the Laws of the State of New York on behalf of all employees providing services under this Contract (except for those employees, if any, for which the Laws require insurance only pursuant to Article 22.1.3).

22.1.3 United States Longshoremen's and Harbor Workers Act and/or Jones Act Insurance: If specified in Schedule A of the General Conditions or if required by Law, the Contractor shall provide insurance in accordance with the United States Longshoremen's and Harbor Workers Act and/or the Jones Act, on behalf of all qualifying employees providing services under this Contract.

22.1.4 Builders Risk Insurance: If specified in Schedule A of the General Conditions, the Contractor shall provide Builders Risk Insurance on a completed value form for the total value of the Work through Substantial Completion of the Work in its entirety. Such insurance shall be provided on an All Risk basis and include coverage, without limitation, for windstorm (including named windstorm), storm surge, flood and earth movement. Unless waived by the Commissioner, it shall include coverage for ordinance and law, demolition and increased costs of construction, debris removal, pollutant clean up and removal, and expediting costs. Such insurance shall cover, without limitation, (a) all buildings and/or structures involved in the Work, as well as temporary structures at the Site, and (b) any property that is intended to become a permanent part of such building or structure, whether such property is on the Site, in transit or in temporary storage. Policies shall name the Contractor as Named Insured and list the City as both an Additional Insured and a Loss Payee as its interest may appear.

22.1.4(a) Policies of such insurance shall specify that, in the event a loss occurs at an occupied facility, occupancy of such facility is permitted without the consent of the issuing insurance company.

22.1.4(b) Such insurance may be provided through an Installation Floater, at the Contractor's option, if it otherwise conforms with the requirements of this Article 22.1.4.

22.1.5 Commercial Automobile Liability Insurance: The Contractor shall provide Commercial Automobile Liability Insurance for liability arising out of ownership, maintenance or use of any owned (if any), non-owned and hired vehicles to be used in connection with this Contract. Coverage shall be at least as broad as the latest edition of ISO Form CA0001. If vehicles are used for transporting hazardous materials, the Automobile Liability Insurance shall be endorsed to provide pollution liability broadened coverage for covered vehicles (endorsement CA 99 48) as well as proof of MCS 90.

22.1.6 Contractors Pollution Liability Insurance: If specified in Schedule A of the General Conditions, the Contractor shall maintain, or cause the Subcontractor doing such Work to maintain, Contractors Pollution Liability Insurance covering bodily injury and property damage. Such insurance shall provide coverage for actual, alleged or threatened emission, discharge, dispersal, seepage, release or escape of pollutants (including asbestos), including any loss, cost or expense incurred as a result of any cleanup of pollutants (including asbestos) or in the investigation, settlement or defense of any claim, action, or proceedings arising from the operations under this Contract. Such insurance shall be in the Contractor's name and list the City as an Additional Insured and any other entity specified in Schedule A. Coverage shall include, without limitation, (a) loss of use of damaged property or of property that has not been physically injured, (b) transportation, and (c) non-owned disposal sites.

22.1.6(a) Coverage for the City as Additional Insured shall specifically include the City's officials and employees and be at least as broad as provided to the Contractor for this Project.

22.1.6(b) If such insurance is written on a claims-made policy, such policy shall have a retroactive date on or before the effective date of this Contract, and continuous coverage shall be maintained, or an extended discovery period exercised, for a period of not less than three (3) years from the time the Work under this Contract is completed.

22.1.7 Marine Insurance:

22.1.7(a) Marine Protection and Indemnity Insurance: If specified in Schedule A of the General Conditions or if the Contractor engages in marine operations in the execution of any part of the Work, the Contractor shall maintain, or cause the Subcontractor doing such Work to maintain, Marine Protection and Indemnity Insurance with coverage at least as broad as Form SP-23. The insurance shall provide coverage for the Contractor or Subcontractor (whichever is doing this Work) and for the City (together with its officials and employees) and any other entity specified in Schedule A as an Additional Insured for bodily injury and property damage arising from marine operations under this Contract. Coverage shall include, without limitation, injury or death of crew members (if not fully provided through other insurance), removal of wreck, damage to piers, wharves and other fixed or floating objects and loss of or damage to any other vessel or craft, or to property on such other vessel or craft.

22.1.7(b) Hull and Machinery Insurance: If specified in Schedule A of the General Conditions or if the Contractor engages in marine operations in the execution of any part of the Work, the Contractor shall maintain, or cause the Subcontractor doing such Work to maintain, Hull and Machinery Insurance with coverage for the Contractor or Subcontractor (whichever is doing this Work) and for the City (together with its officials and employees) as Additional Insured at least as broad as the latest edition of American Institute Tug Form for all tugs used under this Contract and Collision Liability at least as broad as the latest edition of American Institute Hull Clauses.

22.1.7(c) Marine Pollution Liability Insurance: If specified in Schedule A of the General Conditions or if the Contractor engages in marine operations in the execution of any part of the Work, the Contractor shall maintain, or cause the Subcontractor doing such Work to maintain, Marine Pollution Liability Insurance covering itself (or the Subcontractor doing such Work) as Named Insured and the City (together with its officials and employees) and any other entity specified in Schedule A as an Additional Insured. Coverage shall be at least as broad as that provided by the latest edition of Water Quality Insurance Syndicate Form and include, without limitation, liability arising from the discharge or substantial threat of a discharge of oil, or from the release or threatened release of a hazardous substance including injury to, or economic losses resulting from, the destruction of or damage to real property, personal property or natural resources.

22.1.8 The Contractor shall provide such other types of insurance, at such minimum limits and with such conditions, as are specified in Schedule A of the General Conditions.

22.2 General Requirements for Insurance Coverage and Policies:

22.2.1 All required insurance policies shall be maintained with companies that may lawfully issue the required policy and have an A.M. Best rating of at least A-/VII or a Standard and Poor's rating of at least A, unless prior written approval is obtained from the City Corporation Counsel.

22.2.2 The Contractor shall be solely responsible for the payment of all premiums for all required policies and all deductibles and self-insured retentions to which such policies are subject, whether or not the City is an insured under the policy.

22.2.3 In his/her sole discretion, the Commissioner may, subject to the approval of the Comptroller and the City Corporation Counsel, accept Letters of Credit and/or custodial accounts in lieu of required insurance.

22.2.4 The City's limits of coverage for all types of insurance required pursuant to Schedule A of the General Conditions shall be the greater of (i) the minimum limits set forth in Schedule A or (ii) the limits provided to the Contractor as Named Insured under all primary, excess, and umbrella policies of that type of coverage.

22.2.5 The Contractor may satisfy its insurance obligations under this Article 22 through primary policies or a combination of primary and excess/umbrella policies, so long as all policies provide the scope of coverage required herein.

22.2.6 Policies of insurance provided pursuant to this Article 22 shall be primary and non-contributing to any insurance or self-insurance maintained by the City.

22.3 Proof of Insurance:

22.3.1 For all types of insurance required by Article 22.1 and Schedule A, except for insurance required by Articles 22.1.4 and 22.1.7, the Contractor shall file proof of insurance in accordance with this Article 22.3 within ten (10) Days of award. For insurance provided pursuant to Articles 22.1.4 and 22.1.7, proof shall be filed by a date specified by the Commissioner or ten (10) Days prior to the commencement of the portion of the Work covered by such policy, whichever is earlier.

22.3.2 For Workers' Compensation Insurance provided pursuant to Article 22.1.2, the Contractor shall submit one of the following forms: C-105.2 Certificate of Workers' Compensation Insurance; U-26.3 - State Insurance Fund Certificate of Workers' Compensation Insurance; Request for WC/DB Exemption (Form CE-200); equivalent or successor forms used by the New York State Workers' Compensation Board; or other proof of insurance in a form acceptable to the Commissioner. For Disability Benefits Insurance provided pursuant to Article 22.1.2, the Contractor shall submit DB-120.1 - Certificate Of Insurance Coverage Under The NYS Disability Benefits Law, Request for WC/DB Exemption (Form CE-200); equivalent or successor forms used by the New York State Workers' Compensation Board; or other proof of insurance in a form acceptable to the Commissioner. ACORD forms are not acceptable.

22.3.3 For policies provided pursuant to all of Article 22.1 other than Article 22.1.2, the Contractor shall submit one or more Certificates of Insurance on forms acceptable to the Commissioner. All such Certificates of Insurance shall certify (a) the issuance and effectiveness of such policies of insurance, each with the specified minimum limits (b) for insurance secured pursuant to Article 22.1.1 that the City and any other entity specified in Schedule A is an Additional Insured with coverage at least as broad as the most recent edition of ISO Forms CG 20 10, CG 20 37, and CG 20 26, as applicable; (c) in the event insurance is required pursuant to Article 22.1.6 and/or Article 22.1.7, that the City is an Additional Insured thereunder; (d) the company code issued to the insurance company by the National Association of Insurance Commissioners (the NAIC number); and (e) the number assigned to the Contract by the City. All such Certificates of Insurance shall be accompanied by either a duly executed "Certification by Broker" in the form contained in Part III of Schedule A or copies of all policies referenced in such Certificate of Insurance as certified by an authorized representative of the issuing insurance carrier. If any policy is not available at the time of submission, certified binders may be submitted until such time as the policy is available, at which time a certified copy of the policy shall be submitted.

22.3.4 Documentation confirming renewals of insurance shall be submitted to the Commissioner prior to the expiration date of coverage of policies required under this Contract. Such proofs of insurance shall comply with the requirements of Articles 22.3.2 and 22.3.3.

22.3.5 The Contractor shall be obligated to provide the City with a copy of any policy of insurance provided pursuant to this Article 22 upon the demand for such policy by the Commissioner or the City Corporation Counsel.

22.4 Operations of the Contractor:

22.4.1 The Contractor shall not commence the Work unless and until all required certificates have been submitted to and accepted by the Commissioner. Acceptance by the Commissioner of a certificate does not excuse the Contractor from securing insurance

consistent with all provisions of this Article 22 or of any liability arising from its failure to do so.

22.4.2 The Contractor shall be responsible for providing continuous insurance coverage in the manner, form, and limits required by this Contract and shall be authorized to perform Work only during the effective period of all required coverage.

22.4.3 In the event that any of the required insurance policies lapse, are revoked, suspended or otherwise terminated, for whatever cause, the Contractor shall immediately stop all Work, and shall not recommence Work until authorized in writing to do so by the Commissioner. Upon quitting the Site, except as otherwise directed by the Commissioner, the Contractor shall leave all plant, materials, equipment, tools, and supplies on the Site. Contract time shall continue to run during such periods and no extensions of time will be granted. The Commissioner may also declare the Contractor in default for failure to maintain required insurance.

22.4.4 In the event the Contractor receives notice, from an insurance company or other person, that any insurance policy required under this Article 22 shall be cancelled or terminated (or has been cancelled or terminated) for any reason, the Contractor shall immediately forward a copy of such notice to both the Commissioner and the New York City Comptroller, attn: Office of Contract Administration, Municipal Building, One Centre Street, room 1005, New York, New York 10007. Notwithstanding the foregoing, the Contractor shall ensure that there is no interruption in any of the insurance coverage required under this Article 22.

22.4.5 Where notice of loss, damage, occurrence, accident, claim or suit is required under an insurance policy maintained in accordance with this Article 22, the Contractor shall notify in writing all insurance carriers that issued potentially responsive policies of any such event relating to any operations under this Contract (including notice to Commercial General Liability insurance carriers for events relating to the Contractor's own employees) no later than 20 days after such event. For any policy where the City is an Additional Insured, such notice shall expressly specify that "this notice is being given on behalf of the City of New York as Insured as well as the Named Insured." Such notice shall also contain the following information: the number of the insurance policy, the name of the named insured, the date and location of the damage, occurrence, or accident, and the identity of the persons or things injured, damaged or lost. The Contractor shall simultaneously send a copy of such notice to the City of New York c/o Insurance Claims Specialist, Affirmative Litigation Division, New York City Law Department, 100 Church Street, New York, New York 10007.

22.4.6 In the event of any loss, accident, claim, action, or other event that does or can give rise to a claim under any insurance policy required under this Article 22, the Contractor shall at all times fully cooperate with the City with regard to such potential or actual claim.

22.5 Subcontractor Insurance: In the event the Contractor requires any Subcontractor to procure insurance with regard to any operations under this Contract and requires such Subcontractor to name the Contractor as an Additional Insured thereunder, the Contractor shall ensure that the Subcontractor name the City, including its officials and employees, as an Additional Insured with coverage at least as broad as the most recent edition of ISO Form CG 20 26.

22.6 Wherever reference is made in Article 7 or this Article 22 to documents to be sent to the Commissioner (e.g., notices, filings, or submissions), such documents shall be sent to the address set forth in Schedule A of the General Conditions. In the event no address is set forth in Schedule A, such documents are to be sent to the Commissioner's address as provided elsewhere in this Contract.

22.7 Apart from damages or losses covered by insurance provided pursuant to Articles 22.1.2, 22.1.3, or 22.1.5, the Contractor waives all rights against the City, including its officials and employees, for any damages or losses that are covered under any insurance required under this Article 22 (whether or not such insurance is actually procured or claims are paid thereunder) or any other insurance applicable to the operations of the Contractor and/or its employees, agents, or Subcontractors.

22.8 In the event the Contractor utilizes a self-insurance program to satisfy any of the requirements of this Article 22, the Contractor shall ensure that any such self-insurance program provides the City with all rights that would be provided by traditional insurance under this Article 22, including but not limited to the defense and indemnification obligations that insurers are required to undertake in liability policies.

22.9 Materiality/Non-Waiver: The Contractor's failure to secure policies in complete conformity with this Article 22, or to give an insurance company timely notice of any sort required in this Contract or to do anything else required by this Article 22 shall constitute a material breach of this Contract. Such breach shall not be waived or otherwise excused by any action or inaction by the City at any time.

22.10 Pursuant to General Municipal Law Section 108, this Contract shall be void and of no effect unless Contractor maintains Workers' Compensation Insurance for the term of this Contract to the extent required and in compliance with the New York State Workers' Compensation Law.

22.11 Other Remedies: Insurance coverage provided pursuant to this Article 22 or otherwise shall not relieve the Contractor of any liability under this Contract, nor shall it preclude the City from exercising any rights or taking such other actions available to it under any other provisions of this Contract or Law.

ARTICLE 23. MONEY RETAINED AGAINST CLAIMS

23.1 If any claim shall be made by any person or entity (including Other Contractors with the City on this Project) against the City or against the Contractor and the City for any of the following:

- (a) An alleged loss, damage, injury, theft or vandalism of any of the kinds referred to in Articles 7 and 12, plus the reasonable costs of defending the City, which in the opinion of the Comptroller may not be paid by an insurance company (for any reason whatsoever); or
- (b) An infringement of copyrights, patents or use of patented articles, tools, etc., as referred to in Article 57; or
- (c) Damage claimed to have been caused directly or indirectly by the failure of the Contractor to perform the Work in strict accordance with this Contract,

the amount of such claim, or so much thereof as the Comptroller may deem necessary, may be withheld by the Comptroller, as security against such claim, from any money due hereunder. The Comptroller, in his/her discretion, may permit the Contractor to substitute other satisfactory security in lieu of the monies so withheld.

23.2 If an action on such claim is timely commenced and the liability of the City, or the Contractor, or both, shall have been established therein by a final judgment of a court of competent jurisdiction, or if such claim shall have been admitted by the Contractor to be valid, the Comptroller

shall pay such judgment or admitted claim out of the monies retained by the Comptroller under the provisions of this Article 23, and return the balance, if any, without interest, to the Contractor.

ARTICLE 24. MAINTENANCE AND GUARANTY

24.1 The Contractor shall promptly repair, replace, restore or rebuild, as the Commissioner may determine, any finished Work in which defects of materials or workmanship may appear or to which damage may occur because of such defects, during the one (1) year period subsequent to the date of Substantial Completion (or use and occupancy in accordance with Article 16), except where other periods of maintenance and guaranty are provided for in Schedule A.

24.2 As security for the faithful performance of its obligations hereunder, the Contractor, upon filing its requisition for payment on Substantial Completion, shall deposit with the Commissioner a sum equal to one (1%) percent of the price (or the amount fixed in Schedule A of the General Conditions) in cash or certified check upon a state or national bank and trust company or a check of such bank and trust company signed by a duly authorized officer thereof and drawn to the order of the Comptroller, or obligations of the City, which the Comptroller may approve as of equal value with the sum so required.

24.3 In lieu of the above, the Contractor may make such security payment to the City by authorizing the Commissioner in writing to deduct the amount from the Substantial Completion payment which shall be deemed the deposit required above.

24.4 If the Contractor has faithfully performed all of its obligations hereunder the Commissioner shall so certify to the Comptroller within five (5) Days after the expiration of one (1) year from the date of Substantial Completion and acceptance of the Work or within thirty (30) Days after the expiration of the guarantee period fixed in the Specifications. The security payment shall be repaid to the Contractor without interest within thirty (30) Days after certification by the Commissioner to the Comptroller that the Contractor has faithfully performed all of its obligations hereunder.

24.5 Notice by the Commissioner to the Contractor to repair, replace, rebuild or restore such defective or damaged Work shall be timely, pursuant to this article, if given not later than ten (10) Days subsequent to the expiration of the one (1) year period or other periods provided for herein.

24.6 If the Contractor shall fail to repair, replace, rebuild or restore such defective or damaged Work promptly after receiving such notice, the Commissioner shall have the right to have the Work done by others in the same manner as provided for in the completion of a defaulted Contract, under Article 51.

24.7 If the security payment so deposited is insufficient to cover the cost of such Work, the Contractor shall be liable to pay such deficiency on demand by the Commissioner.

24.8 The Engineer's certificate setting forth the fair and reasonable cost of repairing, replacing, rebuilding or restoring any damaged or defective Work when performed by one other than the Contractor, shall be binding and conclusive upon the Contractor as to the amount thereof.

24.9 The Contractor shall obtain all manufacturers' warranties and guaranties of all equipment and materials required by this Contract in the name of the City and shall deliver same to the Commissioner. All of the City's rights and title and interest in and to said manufacturers' warranties and guaranties may be assigned by the City to any subsequent purchasers of such equipment and materials or lessees of the premises into which the equipment and materials have been installed.

CHAPTER VI
CHANGES, EXTRA WORK, AND DOCUMENTATION OF CLAIM

ARTICLE 25. CHANGES

25.1 Changes may be made to this Contract only as duly authorized in writing by the Commissioner in accordance with the Law and this Contract. All such changes, modifications, and amendments will become a part of the Contract. Work so ordered shall be performed by the Contractor.

25.2 Contract changes will be made only for Work necessary to complete the Work included in the original scope of the Contract and/or for non-material changes to the scope of the Contract. Changes are not permitted for any material alteration in the scope of Work in the Contract.

25.3 The Contractor shall be entitled to a price adjustment for Extra Work performed pursuant to a written change order. Adjustments to price shall be computed in one or more of the following ways:

25.3.1 By applicable unit prices specified in the Contract; and/or

25.3.2 By agreement of a fixed price; and/or

25.3.3 By time and material records; and/or

25.3.4 In any other manner approved by the CCPO.

25.4 All payments for change orders are subject to pre-audit by the Engineering Audit Officer and may be post-audited by the Comptroller and/or the Agency.

ARTICLE 26. METHODS OF PAYMENT FOR OVERRUNS AND EXTRA WORK

26.1 Overrun of Unit Price Item: An overrun is any quantity of a unit price item which the Contractor is directed to provide which is in excess of one hundred twenty-five (125%) percent of the estimated quantity for that item set forth in the bid schedule.

26.1.1 For any unit price item, the Contractor will be paid at the unit price bid for any quantity up to one hundred twenty-five (125%) percent of the estimated quantity for that item set forth in the bid schedule. If during the progress of the Work, the actual quantity of any unit price item required to complete the Work approaches the estimated quantity for that item, and for any reason it appears that the actual quantity of any unit price item necessary to complete the Work will exceed the estimated quantity for that item by twenty-five (25%) percent, the Contractor shall immediately notify the Engineer of such anticipated overrun. The Contractor shall not be compensated for any quantity of a unit price item provided which is in excess of one hundred twenty-five (125%) percent of the estimated quantity for that item set forth in the bid schedule without written authorization from the Engineer.

26.1.2 If the actual quantity of any unit price item necessary to complete the Work will exceed one hundred twenty five (125%) percent of the estimated quantity for that item set forth in the bid schedule, the City reserves the right and the Contractor agrees to negotiate a new unit price for such item. In no event shall such negotiated new unit price exceed the unit bid price. If the City and Contractor cannot agree on a new unit price, then the City shall order the Contractor and the Contractor agrees to provide additional quantities of the

item on the basis of time and material records for the actual and reasonable cost as determined under Article 26.2, but in no event at a unit price exceeding the unit price bid.

26.2 Extra Work: For Extra Work where payment is by agreement on a fixed price in accordance with Article 25.3.2, the price to be paid for such Extra Work shall be based on the fair and reasonable estimated cost of the items set forth below. For Extra Work where payment is based on time and material records in accordance with Article 25.3.3, the price to be paid for such Extra Work shall be the actual and reasonable cost of the items set forth below, calculated in accordance with the formula specified therein, if any.

- 26.2.1 Necessary materials (including transportation to the Site); plus
- 26.2.2 Necessary direct labor, including payroll taxes (subject to statutory wage caps) and supplemental benefits; plus
- 26.2.3 Sales and personal property taxes, if any, required to be paid on materials not incorporated into such Extra Work; plus
- 26.2.4 Reasonable rental value of Contractor-owned (or Subcontractor-owned, as applicable), necessary plant and equipment other than Small Tools, plus fuel/energy costs. Except for fuel costs for pick-up trucks which shall be reimbursed based on a consumption of five (5) gallons per shift, fuel costs shall be reimbursed based on actual costs or, in the absence of auditable documentation, the following fuel consumption formula per operating hour: $(.035) \times (\text{HP rating}) \times (\text{Fuel cost/gallon})$. Reasonable rental value is defined as the lower of either seventy-five percent of the monthly prorated rental rates established in "The AED Green Book, Rental Rates and Specifications for Construction Equipment" published by Equipment Watch (the "Green Book"), or seventy-five percent of the monthly prorated rental rates established in the "Rental Rate Blue Book for Construction Equipment" published by Equipment Watch (the "Blue Book") (the applicable Blue Book rate being for rental only without the addition of any operational costs listed in the Blue Book). The reasonable rental value is deemed to be inclusive of all operating costs except for fuel/energy consumption and equipment operator's wages/costs. For multiple shift utilization, reimbursement shall be calculated as follows: first shift shall be seventy-five (75%) percent of such rental rates; second shift shall be sixty (60%) percent of the first shift rate; and third shift shall be forty (40%) percent of the first shift rate. Equipment on standby shall be reimbursed at one-third (1/3) the prorated monthly rental rate. Contractor-owned (or Subcontractor-owned, as applicable) equipment includes equipment from rental companies affiliated with or controlled by the Contractor (or Subcontractor, as applicable), as determined by the Commissioner. In establishing cost reimbursement for non-operating Contractor-owned (or Subcontractor-owned, as applicable) equipment (scaffolding, sheeting systems, road plates, etc.), the City may restrict reimbursement to a purchase-salvage/life cycle basis if less than the computed rental costs; plus
- 26.2.5 Necessary installation and dismantling of such plant and equipment, including transportation to and from the Site, if any, provided that, in the case of non-Contractor-owned (or non-Subcontractor-owned, as applicable) equipment rented from a third party, the cost of installation and dismantling are not allowable if such costs are included in the rental rate; plus
- 26.2.6 Necessary fees charged by governmental entities; plus

26.2.7 Necessary construction-related service fees charged by non-governmental entities, such as landfill tipping fees; plus

26.2.8 Reasonable rental costs of non-Contractor-owned (or non-Subcontractor-owned, as applicable) necessary plant and equipment other than Small Tools, plus fuel/energy costs. Except for fuel costs for pick-up trucks which shall be reimbursed based on a consumption of five (5) gallons per shift, fuel costs shall be reimbursed based on actual costs or, in the absence of auditable documentation, the following fuel consumption formula per hour of operation: $(.035) \times (\text{HP rating}) \times (\text{Fuel cost/gallon})$. In lieu of renting, the City reserves the right to direct the purchase of non-operating equipment (scaffolding, sheeting systems, road plates, etc.), with payment on a purchase-salvage/life cycle basis, if less than the projected rental costs; plus

26.2.9 Workers' Compensation Insurance, and any insurance coverage expressly required by the City for the performance of the Extra Work which is different than the types of insurance required by Article 22 and Schedule A of the General Conditions. The cost of Workers' Compensation Insurance is subject to applicable payroll limitation caps and shall be based upon the carrier's Manual Rate for such insurance derived from the applicable class Loss Cost ("LC") and carrier's Lost Cost Multiplier ("LCM") approved by the New York State Department of Financial Services, and with the exception of experience rating, rate modifiers as promulgated by the New York Compensation Insurance Rating Board ("NYCIRB"); plus

26.2.10 Additional costs incurred as a result of the Extra Work for performance and payment bonds; plus

26.2.11 Twelve percent (12%) percent of the total of items in Articles 26.2.1 through 26.2.5 as compensation for overhead, except that no percentage for overhead will be allowed on Payroll Taxes or on the premium portion of overtime pay or on sales and personal property taxes. Overhead shall include without limitation, all costs and expenses in connection with administration, management superintendence, small tools, and insurance required by Schedule A of the General Conditions other than Workers' Compensation Insurance; plus

26.2.12 Ten (10%) percent of the total of items in Articles 26.2.1 through 26.2.5, plus the items in Article 26.2.11, as compensation for profit, except that no percentage for profit will be allowed on Payroll Taxes or on the premium portion of overtime pay or on sales and personal property taxes; plus

26.2.13 Five (5%) percent of the total of items in Articles 26.2.6 through 26.2.10 as compensation for overhead and profit.

26.3 Where the Extra Work is performed in whole or in part by other than the Contractor's own forces pursuant to Article 26.2, the Contractor shall be paid, subject to pre-audit by the Engineering Audit Officer, the cost of such Work computed in accordance with Article 26.2 above, plus an additional allowance of five (5%) percent to cover the Contractor's overhead and profit.

26.4 Where a change is ordered, involving both Extra Work and omitted or reduced Contract Work, the Contract price shall be adjusted, subject to pre-audit by the EAO, in an amount based on the difference between the cost of such Extra Work and of the omitted or reduced Work.

26.5 Where the Contractor and the Commissioner can agree upon a fixed price for Extra Work in accordance with Article 25.3.2 or another method of payment for Extra Work in accordance with Article

25.3.4, or for Extra Work ordered in connection with omitted Work, such method, subject to pre-audit by the EAO, may, at the option of the Commissioner, be substituted for the cost plus a percentage method provided in Article 26.2; provided, however, that if the Extra Work is performed by a Subcontractor, the Contractor shall not be entitled to receive more than an additional allowance of five (5%) percent for overhead and profit over the cost of such Subcontractor's Work as computed in accordance with Article 26.2.

ARTICLE 27. RESOLUTION OF DISPUTES

27.1 All disputes between the City and the Contractor of the kind delineated in this Article 27.1 that arise under, or by virtue of, this Contract shall be finally resolved in accordance with the provisions of this Article 27 and the PPB Rules. This procedure for resolving all disputes of the kind delineated herein shall be the exclusive means of resolving any such disputes.

27.1.1 This Article 27 shall not apply to disputes concerning matters dealt with in other sections of the PPB Rules, or to disputes involving patents, copyrights, trademarks, or trade secrets (as interpreted by the courts of New York State) relating to proprietary rights in computer software.

27.1.2 This Article 27 shall apply only to disputes about the scope of Work delineated by the Contract, the interpretation of Contract documents, the amount to be paid for Extra Work or disputed work performed in connection with the Contract, the conformity of the Contractor's Work to the Contract, and the acceptability and quality of the Contractor's Work; such disputes arise when the Engineer, Resident Engineer, Engineering Audit Officer, or other designee of the Commissioner makes a determination with which the Contractor disagrees.

27.2 All determinations required by this Article 27 shall be made in writing clearly stated, with a reasoned explanation for the determination based on the information and evidence presented to the party making the determination. Failure to make such determination within the time required by this Article 27 shall be deemed a non-determination without prejudice that will allow application to the next level.

27.3 During such time as any dispute is being presented, heard, and considered pursuant to this Article 27, the Contract terms shall remain in force and the Contractor shall continue to perform Work as directed by the ACCO or the Engineer. Failure of the Contractor to continue Work as directed shall constitute a waiver by the Contractor of its claim.

27.4 Presentation of Disputes to Commissioner.

Notice of Dispute and Agency Response. The Contractor shall present its dispute in writing ("Notice of Dispute") to the Commissioner within thirty (30) Days of receiving written notice of the determination or action that is the subject of the dispute. This notice requirement shall not be read to replace any other notice requirements contained in the Contract. The Notice of Dispute shall include all the facts, evidence, documents, or other basis upon which the Contractor relies in support of its position, as well as a detailed computation demonstrating how any amount of money claimed by the Contractor in the dispute was arrived at. Within thirty (30) Days after receipt of the detailed written submission comprising the complete Notice of Dispute, the Engineer, Resident Engineer, Engineering Audit Officer, or other designee of the Commissioner shall submit to the Commissioner all materials he or she deems pertinent to the dispute. Following initial submissions to the Commissioner, either party may demand of the other the production of any document or other material the demanding party believes may be relevant to the dispute. The requested party shall produce all relevant materials that are not otherwise

protected by a legal privilege recognized by the courts of New York State. Any question of relevancy shall be determined by the Commissioner whose decision shall be final. Willful failure of the Contractor to produce any requested material whose relevancy the Contractor has not disputed, or whose relevancy has been affirmatively determined, shall constitute a waiver by the Contractor of its claim.

27.4.1 Commissioner Inquiry. The Commissioner shall examine the material and may, in his or her discretion, convene an informal conference with the Contractor, the ACCO, and the Engineer, Resident Engineer, Engineering Audit Officer, or other designee of the Commissioner to resolve the issue by mutual consent prior to reaching a determination. The Commissioner may seek such technical or other expertise as he or she shall deem appropriate, including the use of neutral mediators, and require any such additional material from either or both parties as he or she deems fit. The Commissioner's ability to render, and the effect of, a decision hereunder shall not be impaired by any negotiations in connection with the dispute presented, whether or not the Commissioner participated therein. The Commissioner may or, at the request of any party to the dispute, shall compel the participation of any Other Contractor with a contract related to the Work of this Contract, and that Contractor shall be bound by the decision of the Commissioner. Any Other Contractor thus brought into the dispute resolution proceeding shall have the same rights and obligations under this Article 27 as the Contractor initiating the dispute.

27.4.2 Commissioner Determination. Within thirty (30) Days after the receipt of all materials and information, or such longer time as may be agreed to by the parties, the Commissioner shall make his or her determination and shall deliver or send a copy of such determination to the Contractor, the ACCO, and Engineer, Resident Engineer, Engineering Audit Officer, or other designee of the Commissioner, as applicable, together with a statement concerning how the decision may be appealed.

27.4.3 Finality of Commissioner's Decision. The Commissioner's decision shall be final and binding on all parties, unless presented to the Contract Dispute Resolution Board pursuant to this Article 27. The City may not take a petition to the Contract Dispute Resolution Board. However, should the Contractor take such a petition, the City may seek, and the Contract Dispute Resolution Board may render, a determination less favorable to the Contractor and more favorable to the City than the decision of the Commissioner.

27.5 Presentation of Dispute to the Comptroller. Before any dispute may be brought by the Contractor to the Contract Dispute Resolution Board, the Contractor must first present its claim to the Comptroller for his or her review, investigation, and possible adjustment.

27.5.1 Time, Form, and Content of Notice. Within thirty (30) Days of its receipt of a decision by the Commissioner, the Contractor shall submit to the Comptroller and to the Commissioner a Notice of Claim regarding its dispute with the Agency. The Notice of Claim shall consist of (i) a brief written statement of the substance of the dispute, the amount of money, if any, claimed and the reason(s) the Contractor contends the dispute was wrongly decided by the Commissioner; (ii) a copy of the written decision of the Commissioner; and (iii) a copy of all materials submitted by the Contractor to the Agency, including the Notice of Dispute. The Contractor may not present to the Comptroller any material not presented to the Commissioner, except at the request of the Comptroller.

27.5.2 Response. Within thirty (30) Days of receipt of the Notice of Claim, the Agency shall make available to the Comptroller a copy of all material submitted by the Agency to the Commissioner in connection with the dispute. The Agency may not present to the

Comptroller any material not presented to the Commissioner except at the request of the Comptroller.

27.5.3 Comptroller Investigation. The Comptroller may investigate the claim in dispute and, in the course of such investigation, may exercise all powers provided in Sections 7-201 and 7-203 of the Administrative Code. In addition, the Comptroller may demand of either party, and such party shall provide, whatever additional material the Comptroller deems pertinent to the claim, including original business records of the Contractor. Willful failure of the Contractor to produce within fifteen (15) Days any material requested by the Comptroller shall constitute a waiver by the Contractor of its claim. The Comptroller may also schedule an informal conference to be attended by the Contractor, Agency representatives, and any other personnel desired by the Comptroller.

27.5.4 Opportunity of Comptroller to Compromise or Adjust Claim. The Comptroller shall have forty-five (45) Days from his or her receipt of all materials referred to in Article 27.5.3 to investigate the disputed claim. The period for investigation and compromise may be further extended by agreement between the Contractor and the Comptroller, to a maximum of ninety (90) Days from the Comptroller's receipt of all materials. The Contractor may not present its petition to the Contract Dispute Resolution Board until the period for investigation and compromise delineated in this Article 27.5.4 has expired. In compromising or adjusting any claim hereunder, the Comptroller may not revise or disregard the terms of the Contract between the parties.

27.6 Contract Dispute Resolution Board. There shall be a Contract Dispute Resolution Board composed of:

27.6.1 The chief administrative law judge of the Office of Administrative Trials and Hearings (OATH) or his/her designated OATH administrative law judge, who shall act as chairperson, and may adopt operational procedures and issue such orders consistent with this Article 27 as may be necessary in the execution of the Contract Dispute Resolution Board's functions, including, but not limited to, granting extensions of time to present or respond to submissions;

27.6.2 The CCPO or his/her designee; any designee shall have the requisite background to consider and resolve the merits of the dispute and shall not have participated personally and substantially in the particular matter that is the subject of the dispute or report to anyone who so participated; and

27.6.3 A person with appropriate expertise who is not an employee of the City. This person shall be selected by the presiding administrative law judge from a prequalified panel of individuals, established and administered by OATH with appropriate background to act as decision-makers in a dispute. Such individual may not have a contract or dispute with the City or be an officer or employee of any company or organization that does, or regularly represents persons, companies, or organizations having disputes with the City.

27.7 Petition to the Contract Dispute Resolution Board. In the event the claim has not been settled or adjusted by the Comptroller within the period provided in this Article 27, the Contractor, within thirty (30) Days thereafter, may petition the Contract Dispute Resolution Board to review the Commissioner's determination.

27.7.1 Form and Content of Petition by Contractor. The Contractor shall present its dispute to the Contract Dispute Resolution Board in the form of a petition, which shall

include (i) a brief written statement of the substance of the dispute, the amount of money, if any, claimed, and the reason(s) the Contractor contends the dispute was wrongly decided by the Commissioner; (ii) a copy of the written Decision of the Commissioner, (iii) copies of all materials submitted by the Contractor to the Agency; (iv) a copy of the written decision of the Comptroller, if any, and (v) copies of all correspondence with, or written material submitted by the Contractor, to the Comptroller. The Contractor shall concurrently submit four (4) complete sets of the Petition: one set to the City Corporation Counsel (Attn: Commercial and Real Estate Litigation Division) and three (3) sets to the Contract Dispute Resolution Board at OATH's offices with proof of service on the City Corporation Counsel. In addition, the Contractor shall submit a copy of the written statement of the substance of the dispute, cited in (i) above, to both the Commissioner and the Comptroller.

27.7.2 Agency Response. Within thirty (30) Days of its receipt of the Petition by the City Corporation Counsel, the Agency shall respond to the brief written statement of the Contractor and make available to the Contract Dispute Resolution Board all material it submitted to the Commissioner and Comptroller. Three (3) complete copies of the Agency response shall be provided to the Contract Dispute Resolution Board and one to the Contractor. Extensions of time for submittal of the Agency response shall be given as necessary upon a showing of good cause or, upon consent of the parties, for an initial period of up to thirty (30) Days.

27.7.3 Further Proceedings. The Contract Dispute Resolution Board shall permit the Contractor to present its case by submission of memoranda, briefs, and oral argument. The Contract Dispute Resolution Board shall also permit the Agency to present its case in response to the Contractor by submission of memoranda, briefs, and oral argument. If requested by the City Corporation Counsel, the Comptroller shall provide reasonable assistance in the preparation of the Agency's case. Neither the Contractor nor the Agency may support its case with any documentation or other material that was not considered by the Comptroller, unless requested by the Contract Dispute Resolution Board. The Contract Dispute Resolution Board, in its discretion, may seek such technical or other expert advice as it shall deem appropriate and may seek, on its own or upon application of a party, any such additional material from any party as it deems fit. The Contract Dispute Resolution Board, in its discretion, may combine more than one dispute between the parties for concurrent resolution.

27.7.4 Contract Dispute Resolution Board Determination. Within forty-five (45) Days of the conclusion of all written submissions and oral arguments, the Contract Dispute Resolution Board shall render a written decision resolving the dispute. In an unusually complex case, the Contract Dispute Resolution Board may render its decision in a longer period, not to exceed ninety (90) Days, and shall so advise the parties at the commencement of this period. The Contract Dispute Resolution Board's decision must be consistent with the terms of the Contract. Decisions of the Contract Dispute Resolution Board shall only resolve matters before the Contract Dispute Resolution Board and shall not have precedential effect with respect to matters not before the Contract Dispute Resolution Board.

27.7.5 Notification of Contract Dispute Resolution Board Decision. The Contract Dispute Resolution Board shall send a copy of its decision to the Contractor, the ACCO, the Engineer, the Comptroller, the City Corporation Counsel, the CCPO, and the PPB. A decision in favor of the Contractor shall be subject to the prompt payment provisions of the PPB Rules. The Required Payment Date shall be thirty (30) Days after the date the parties are formally notified of the Contract Dispute Resolution Board's decision.

27.7.6 Finality of Contract Dispute Resolution Board Decision. The Contract Dispute Resolution

Board's decision shall be final and binding on all parties. Any party may seek review of the Contract Dispute Resolution Board's decision solely in the form of a challenge, filed within four (4) months of the date of the Contract Dispute Resolution Board's decision, in a court of competent jurisdiction of the State of New York, County of New York pursuant to Article 78 of the Civil Practice Law and Rules. Such review by the court shall be limited to the question of whether or not the Contract Dispute Resolution Board's decision was made in violation of lawful procedure, was affected by an error of Law, or was arbitrary and capricious or an abuse of discretion. No evidence or information shall be introduced or relied upon in such proceeding that was not presented to the Contract Dispute Resolution Board in accordance with this Article 27.

27.8 Any termination, cancellation, or alleged breach of the Contract prior to or during the pendency of any proceedings pursuant to this Article 27 shall not affect or impair the ability of the Commissioner or Contract Dispute Resolution Board to make a binding and final decision pursuant to this Article 27.

ARTICLE 28. RECORD KEEPING FOR EXTRA OR DISPUTED WORK OR WORK ON A TIME & MATERIALS BASIS

28.1 While the Contractor or any of its Subcontractors is performing Work on a time and material basis or Extra Work on a time and material basis ordered by the Commissioner under Article 25, or where the Contractor believes that it or any of its Subcontractors is performing Extra Work but a final determination by Agency has not been made, or the Contractor or any of its Subcontractors is performing disputed Work (whether on or off the Site), or complying with a determination or order under protest in accordance with Articles 11, 27, and 30, in each such case the Contractor shall furnish the Resident Engineer daily with three (3) copies of written statements signed by the Contractor's representative at the Site showing:

28.1.1 The name, trade, and number of each worker employed on such Work or engaged in complying with such determination or order, the number of hours employed, and the character of the Work each is doing; and

28.1.2 The nature and quantity of any materials, plant and equipment furnished or used in connection with the performance of such Work or compliance with such determination or order, and from whom purchased or rented.

28.2 A copy of such statement will be countersigned by the Resident Engineer, noting thereon any items not agreed to or questioned, and will be returned to the Contractor within two (2) Days after submission.

28.3 The Contractor and its Subcontractors, when required by the Commissioner, or the Comptroller, shall also produce for inspection, at the office of the Contractor or Subcontractor, any and all of its books, bid documents, financial statements, vouchers, records, daily job diaries and reports, and cancelled checks, and any other documents relating to showing the nature and quantity of the labor, materials, plant and equipment actually used in the performance of such Work, or in complying with such determination or order, and the amounts expended therefor, and shall permit the Commissioner and the Comptroller to make such extracts therefrom, or copies thereof, as they or either of them may desire.

28.4 In connection with the examination provided for herein, the Commissioner, upon demand therefor, will produce for inspection by the Contractor such records as the Agency may have with

respect to such Extra Work or disputed Work performed under protest pursuant to order of the Commissioner, except those records and reports which may have been prepared for the purpose of determining the accuracy and validity of the Contractor's claim.

28.5 Failure to comply strictly with these requirements shall constitute a waiver of any claim for extra compensation or damages on account of the performance of such Work or compliance with such determination or order.

ARTICLE 29. OMITTED WORK

29.1 If any Contract Work in a lump sum Contract, or if any part of a lump sum item in a unit price, lump sum, or percentage-bid Contract is omitted by the Commissioner pursuant to Article 33, the Contract price, subject to audit by the EAO, shall be reduced by a pro rata portion of the lump sum bid amount based upon the percent of Work omitted subject to Article 29.4. For the purpose of determining the pro rata portion of the lump sum bid amount, the bid breakdown submitted in accordance with Article 41 shall be considered, but shall not be the determining factor.

29.2 If the whole of a lump sum item or units of any other item is so omitted by the Commissioner in a unit price, lump sum, or percentage-bid Contract, then no payment will be made therefor except as provided in Article 29.4.

29.3 For units that have been ordered but are only partially completed, the unit price shall be reduced by a pro rata portion of the unit price bid based upon the percentage of Work omitted subject to Article 29.4.

29.4 In the event the Contractor, with respect to any omitted Work, has purchased any non-cancelable material and/or equipment that is not capable of use except in the performance of this Contract and has been specifically fabricated for the sole purpose of this Contract, but not yet incorporated into the Work, the Contractor shall be paid for such material and/or equipment in accordance with Article 64.2.1(b); provided, however, such payment is contingent upon the Contractor's delivery of such material and/or equipment in acceptable condition to a location designated by the City.

29.5 The Contractor agrees to make no claim for damages or for loss of overhead and profit with regard to any omitted Work.

ARTICLE 30. NOTICE AND DOCUMENTATION OF COSTS AND DAMAGES; PRODUCTION OF FINANCIAL RECORDS

30.1 If the Contractor shall claim to be sustaining damages by reason of any act or omission of the City or its agents, it shall submit to the Commissioner within forty-five (45) Days from the time such damages are first incurred, and every thirty (30) Days thereafter for as long as such damages are incurred, verified statements of the details and the amounts of such damages, together with documentary evidence of such damages. The Contractor may submit any of the above statements within such additional time as may be granted by the Commissioner in writing upon written request therefor. Failure of the Commissioner to respond in writing to a written request for additional time within thirty (30) Days shall be deemed a denial of the request. On failure of the Contractor to strictly comply with the foregoing provisions, such claims shall be deemed waived and no right to recover on such claims shall exist. Damages that the Contractor may claim in any action or dispute resolution procedure arising under or by reason of this Contract shall not be different from or in excess of the statements and documentation made pursuant to this Article 30.

30.2 In addition to the foregoing statements, the Contractor shall, upon notice from the Commissioner, produce for examination at the Contractor's office, by the Engineer, Architect or Project Manager, all of its books of account, bills, invoices, payrolls, subcontracts, time books, daily reports, bank deposit books, bank statements, check books, and cancelled checks, showing all of its acts and transactions in connection with or relating to or arising by reason of this Contract, and submit itself and persons in its employment, for examination under oath by any person designated by the Commissioner or Comptroller to investigate claims made or disputes against the City under this Contract. At such examination, a duly authorized representative of the Contractor may be present.

30.3 In addition to the statements required under Article 28 and this Article 30, the Contractor and/or its Subcontractor shall, within thirty (30) Days upon notice from the Commissioner or Comptroller, produce for examination at the Contractor's and/or Subcontractor's office, by a representative of either the Commissioner or Comptroller, all of its books of account, bid documents, financial statements, accountant workpapers, bills, invoices, payrolls, subcontracts, time books, daily reports, bank deposit books, bank statements, check books, and cancelled checks, showing all of its acts and transactions in connection with or relating to or arising by reason of this Contract. Further, the Contractor and/or its Subcontractor shall submit any person in its employment, for examination under oath by any person designated by the Commissioner or Comptroller to investigate claims made or disputes against the City under this Contract. At such examination, a duly authorized representative of the Contractor may be present.

30.4 Unless the information and examination required under Article 30.3 is provided by the Contractor and/or its Subcontractor upon thirty (30) Days' notice from the Commissioner or Comptroller, or upon the Commissioner's or Comptroller's written authorization to extend the time to comply, the City shall be released from all claims arising under, relating to or by reason of this Contract, except for sums certified by the Commissioner to be due under the provisions of this Contract. It is further stipulated and agreed that no person has the power to waive any of the foregoing provisions and that in any action or dispute resolution procedure against the City to recover any sum in excess of the sums certified by the Commissioner to be due under or by reason of this Contract, the Contractor must allege in its complaint and prove, at trial or during such dispute resolution procedure, compliance with the provisions of this Article 30.

30.5 In addition, after the commencement of any action or dispute resolution procedure by the Contractor arising under or by reason of this Contract, the City shall have the right to require the Contractor to produce for examination under oath, up until the trial of the action or hearing before the Contract Dispute Resolution Board, the books and documents described in Article 30.3 and submit itself and all persons in its employ for examination under oath. If this Article 30 is not complied with as required, then the Contractor hereby consents to the dismissal of the action or dispute resolution procedure.

**CHAPTER VII
POWERS OF THE RESIDENT ENGINEER,
THE ENGINEER OR ARCHITECT AND THE COMMISSIONER**

ARTICLE 31. THE RESIDENT ENGINEER

31.1 The Resident Engineer shall have the power to inspect, supervise, and control the performance of the Work, subject to review by the Commissioner. The Resident Engineer shall not, however, have the power to issue an Extra Work order, except as specifically designated in writing by the Commissioner.

ARTICLE 32: THE ENGINEER OR ARCHITECT OR PROJECT MANAGER

32.1 The Engineer or Architect or Project Manager, in addition to those matters elsewhere herein delegated to the Engineer and expressly made subject to his/her determination, direction or approval, shall have the power, subject to review by the Commissioner:

- 32.1.1 To determine the amount, quality, and location of the Work to be paid for hereunder; and
- 32.1.2 To determine all questions in relation to the Work, to interpret the Contract Drawings, Specifications, and Addenda, and to resolve all patent inconsistencies or ambiguities therein; and
- 32.1.3 To determine how the Work of this Contract shall be coordinated with Work of Other Contractors engaged simultaneously on this Project, including the power to suspend any part of the Work, but not the whole thereof; and
- 32.1.4 To make minor changes in the Work as he/she deems necessary, provided such changes do not result in a net change in the cost to the City or to the Contractor of the Work to be done under the Contract; and
- 32.1.5 To amplify the Contract Drawings, add explanatory information and furnish additional Specifications and drawings, consistent with this Contract.

32.2 The foregoing enumeration shall not imply any limitation upon the power of the Engineer or Architect or Project Manager, for it is the intent of this Contract that all of the Work shall generally be subject to his/her determination, direction, and approval, except where the determination, direction or approval of someone other than the Engineer or Architect or Project Manager is expressly called for herein.

32.3 The Engineer or Architect or Project Manager shall not, however, have the power to issue an Extra Work order, except as specifically designated in writing by the Commissioner.

ARTICLE 33: THE COMMISSIONER

33.1 The Commissioner, in addition to those matters elsewhere herein expressly made subject to his/her determination, direction or approval, shall have the power:

- 33.1.1 To review and make determinations on any and all questions in relation to this Contract and its performance; and
- 33.1.2 To modify or change this Contract so as to require the performance of Extra Work (subject, however, to the limitations specified in Article 25) or the omission of Contract Work; and
- 33.1.3 To suspend the whole or any part of the Work whenever in his/her judgment such suspension is required:

33.1.3(a) In the interest of the City generally; or

33.1.3(b) To coordinate the Work of the various contractors engaged on this Project pursuant to the provisions of Article 12; or

33.1.3(c) To expedite the completion of the entire Project even though the completion of this particular Contract may thereby be delayed.

ARTICLE 34. NO ESTOPPEL

34.1 Neither the City nor any Agency, official, agent or employee thereof, shall be bound, precluded or estopped by any determination, decision, approval, order, letter, payment or certificate made or given under or in connection with this Contract by the City, the Commissioner, the Engineer, the Resident Engineer, or any other official, agent or employee of the City, either before or after the final completion and acceptance of the Work and payment therefor:

34.1.1 From showing the true and correct classification, amount, quality or character of the Work actually done; or that any such determination, decision, order, letter, payment or certificate was untrue, incorrect or improperly made in any particular, or that the Work, or any part thereof, does not in fact conform to the requirements of this Contract; and

34.1.2 From demanding and recovering from the Contractor any overpayment made to it, or such damages as the City may sustain by reason of the Contractor's failure to perform each and every part of its Contract.

CHAPTER VIII LABOR PROVISIONS

ARTICLE 35. EMPLOYEES

35.1 The Contractor and its Subcontractors shall not employ on the Work:

35.1.1 Anyone who is not competent, faithful and skilled in the Work for which he/she shall be employed; and whenever the Commissioner shall inform the Contractor, in writing, that any employee is, in his/her opinion, incompetent, unfaithful or disobedient, that employee shall be discharged from the Work forthwith, and shall not again be employed upon it; or

35.1.2 Any labor, materials or means whose employment, or utilization during the course of this Contract, may tend to or in any way cause or result in strikes, work stoppages, delays, suspension of Work or similar troubles by workers employed by the Contractor or its Subcontractors, or by any of the trades working in or about the buildings and premises where Work is being performed under this Contract, or by Other Contractors or their Subcontractors pursuant to other contracts, or on any other building or premises owned or operated by the City, its Agencies, departments, boards or authorities. Any violation by the Contractor of this requirement may, upon certification of the Commissioner, be considered as proper and sufficient cause for declaring the Contractor to be in default, and for the City to take action against it as set forth in Chapter X of this Contract, or such other article of this Contract as the Commissioner may deem proper; or

35.1.3 In accordance with Section 220.3-e of the Labor Law of the State of New York (hereinafter "Labor Law"), the Contractor and its Subcontractors shall not employ on the Work any apprentice, unless he/she is a registered individual, under a bona fide program

registered with the New York State Department of Labor. The allowable ratio of apprentices to journey-level workers in any craft classification shall not be greater than the ratio permitted to the Contractor as to its work force on any job under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered as above, shall be paid the wage rate determined by the Comptroller of the City for the classification of Work actually performed. The Contractor or Subcontractor will be required to furnish written evidence of the registration of its program and apprentices as well as all the appropriate ratios and wage rates, for the area of the construction prior to using any apprentices on the Contract Work.

35.2 If the total cost of the Work under this Contract is at least two hundred fifty thousand (\$250,000) dollars, all laborers, workers, and mechanics employed in the performance of the Contract on the public work site, either by the Contractor, Subcontractor or other person doing or contracting to do the whole or a part of the Work contemplated by the Contract, shall be certified prior to performing any Work as having successfully completed a course in construction safety and health approved by the United States Department of Labor's Occupational Safety and Health Administration that is at least ten (10) hours in duration.

35.3 In accordance with Local Law Nos. 30-2012 and 33-2012, codified at sections 6-132 and 12-113 of the Administrative Code, respectively,

35.3.1 The Contractor shall not take an adverse personnel action with respect to an officer or employee in retaliation for such officer or employee making a report of information concerning conduct which such officer or employee knows or reasonably believes to involve corruption, criminal activity, conflict of interest, gross mismanagement or abuse of authority by any officer or employee relating to this Contract to (a) the Commissioner of the Department of Investigation, (b) a member of the New York City Council, the Public Advocate, or the Comptroller, or (c) the CCPO, ACCO, Agency head, or Commissioner.

35.3.2 If any of the Contractor's officers or employees believes that he or she has been the subject of an adverse personnel action in violation of Article 35.3.1, he or she shall be entitled to bring a cause of action against the Contractor to recover all relief necessary to make him or her whole. Such relief may include but is not limited to: (a) an injunction to restrain continued retaliation, (b) reinstatement to the position such employee would have had but for the retaliation or to an equivalent position, (c) reinstatement of full fringe benefits and seniority rights, (d) payment of two times back pay, plus interest, and (e) compensation for any special damages sustained as a result of the retaliation, including litigation costs and reasonable attorney's fees.

35.3.3 The Contractor shall post a notice provided by the City in a prominent and accessible place on any site where work pursuant to the Contract is performed that contains information about:

35.3.3(a) how its employees can report to the New York City Department of Investigation allegations of fraud, false claims, criminality or corruption arising out of or in connection with the Contract; and

35.3.3(b) the rights and remedies afforded to its employees under Administrative Code sections 7-805 (the New York City False Claims Act) and 12-113 (the Whistleblower Protection Expansion Act) for lawful acts taken in connection with the reporting of allegations of fraud, false claims, criminality or corruption in connection with the Contract.

35.3.4 For the purposes of this Article 35.3, "adverse personnel action" includes dismissal, demotion, suspension, disciplinary action, negative performance evaluation, any action resulting in loss of staff, office space, equipment or other benefit, failure to appoint, failure to promote, or any transfer or assignment or failure to transfer or assign against the wishes of the affected officer or employee.

35.3.5 This Article 35.3 is applicable to all of the Contractor's Subcontractors having subcontracts with a value in excess of \$100,000; accordingly, the Contractor shall include this rider in all subcontracts with a value a value in excess of \$100,000.

35.4 Article 35.3 is not applicable to this Contract if it is valued at \$100,000 or less. Articles 35.3.1, 35.3.2, 35.3.4, and 35.3.5 are not applicable to this Contract if it was solicited pursuant to a finding of an emergency.

ARTICLE 36. NO DISCRIMINATION

36.1 The Contractor specifically agrees, as required by Labor Law Section 220-e, as amended, that:

36.1.1 In the hiring of employees for the performance of Work under this Contract or any subcontract hereunder, neither the Contractor, Subcontractor, nor any person acting on behalf of such Contractor or Subcontractor, shall by reason of race, creed, color or national origin discriminate against any citizen of the State of New York who is qualified and available to perform the Work to which the employment relates;

36.1.2 Neither the Contractor, Subcontractor, nor any person on its behalf shall, in any manner, discriminate against or intimidate any employee hired for the performance of Work under this Contract on account of race, creed, color or national origin;

36.1.3 There may be deducted from the amount payable to the Contractor by the City under this Contract a penalty of fifty (\$50.00) dollars for each person for each Day during which such person was discriminated against or intimidated in violation of the provisions of this Contract; and

36.1.4 This Contract may be cancelled or terminated by the City and all moneys due or to become due hereunder may be forfeited, for a second or any subsequent violation of the terms or conditions of this Article 36.

36.1.5 This Article 36 covers all construction, alteration and repair of any public building or public work occurring in the State of New York and the manufacture, sale, and distribution of materials, equipment, and supplies to the extent that such operations are performed within the State of New York pursuant to this Contract.

36.2 The Contractor specifically agrees, as required by Section 6-108 of the Administrative Code, as amended, that:

36.2.1 It shall be unlawful for any person engaged in the construction, alteration or repair of buildings or engaged in the construction or repair of streets or highways pursuant to a Contract with the City or engaged in the manufacture, sale or distribution of materials, equipment or supplies pursuant to a Contract with the City to refuse to employ or to refuse to continue in any employment any person on account of the race, color or creed of such person.

36.2.2 It shall be unlawful for any person or any servant, agent or employee of any person, described in Article 36.1.2, to ask, indicate or transmit, orally or in writing, directly or indirectly, the race, color or creed or religious affiliation of any person employed or seeking employment from such person, firm or corporation.

36.2.3 Breach of the foregoing provisions shall be deemed a violation of a material provision of this Contract.

36.2.4 Any person, or the employee, manager or owner of or officer of such firm or corporation who shall violate any of the provisions of this Article 36.2 shall, upon conviction thereof, be punished by a fine of not more than one hundred (\$100.00) dollars or by imprisonment for not more than thirty (30) Days, or both.

36.3 This Contract is subject to the requirements of Executive Order No. 50 (1980) ("E.O. 50"), as revised; and the rules and regulations promulgated thereunder. No contract will be awarded unless and until these requirements have been complied with in their entirety. By signing this Contract, the Contractor agrees that it:

36.3.1 Will not engage in any unlawful discrimination against any employee or applicant for employment because of race, creed, color, national origin, sex, age, disability, marital status or sexual orientation with respect to all employment decisions including, but not limited to, recruitment, hiring, upgrading, demotion, downgrading, transfer, training, rates of pay or other forms of compensation, layoff, termination, and all other terms and conditions of employment; and

36.3.2 Will not engage in any unlawful discrimination in the selection of Subcontractors on the basis of the owner's race, color, creed, national origin, sex, age, disability, marital status or sexual orientation; and

36.3.3 Will state in all solicitations or advertisements for employees placed by or on behalf of the Contractor that all qualified applicants will receive consideration for employment without unlawful discrimination based on race, creed, color, national origin, sex, age, citizens status, disability, marital status, sexual orientation, or that it is an equal employment opportunity employer; and

36.3.4 Will send to each labor organization or representative of workers with which it has a collective bargaining agreement or other contract or memorandum of understanding, written notification of its equal employment opportunity commitments under E.O. 50 and the rules and regulations promulgated thereunder; and

36.3.5 Will furnish, before the award of the Contract, all information and reports, including an employment report, that are required by E.O. 50, the rules and regulations promulgated thereunder, and orders of the City Department of Business Services, Division of Labor Services (DLS) and will permit access to its books, records, and accounts by the DLS for the purposes of investigation to ascertain compliance with such rules, regulations, and orders.

36.4 The Contractor understands that in the event of its noncompliance with the nondiscrimination clauses of this Contract or with any of such rules, regulations, or orders, such noncompliance shall constitute a material breach of this Contract and noncompliance with E.O. 50 and the rules and regulations promulgated thereunder. After a hearing held pursuant to the rules of the DLS, the Director of the DLS may direct the Commissioner to impose any or all of the following sanctions:

36.4.1 Disapproval of the Contractor; and/or

36.4.2 Suspension or termination of the Contract; and/or

36.4.3 Declaring the Contractor in default; and/or

36.4.4 In lieu of any of the foregoing sanctions, the Director of the DLS may impose an employment program.

In addition to any actions taken under this Contract, failure to comply with E.O. 50 and the rules and regulations promulgated thereunder, in one or more instances, may result in a City Agency declaring the Contractor to be non-responsible in future procurements. The Contractor further agrees that it will refrain from entering into any Contract or Contract modification subject to E.O. 50 and the rules and regulations promulgated thereunder with a Subcontractor who is not in compliance with the requirements of E.O. 50 and the rules and regulations promulgated thereunder.

36.5 The Contractor specifically agrees, as required by Section 6-123 of the Administrative Code, that:

36.5.1 The Contractor will not engage in any unlawful discriminatory practice in violation of Title 8 of the Administrative Code; and

36.5.2 Any failure to comply with this Article 36.5 may subject the Contractor to the remedies set forth in Section 6-123 of the Administrative Code, including, where appropriate, sanctions such as withholding of payment, imposition of an employment program, finding the Contractor to be in default, cancellation of the Contract, or any other sanction or remedy provided by Law or Contract.

ARTICLE 37. LABOR LAW REQUIREMENTS

37.1 The Contractor shall strictly comply with all applicable provisions of the Labor Law, as amended. Such compliance is a material term of this Contract.

37.2 The Contractor specifically agrees, as required by Labor Law Sections 220 and 220-d, as amended, that:

37.2.1 **Hours of Work:** No laborer, worker, or mechanic in the employ of the Contractor, Subcontractor or other person doing or contracting to do the whole or a part of the Work contemplated by this Contract shall be permitted or required to work more than eight (8) hours in any one (1) Day, or more than five (5) Days in any one (1) week, except as provided in the Labor Law and in cases of extraordinary emergency including fire, flood, or danger to life or property, or in the case of national emergency when so proclaimed by the President of the United States of America.

37.2.2 In situations in which there are not sufficient laborers, workers, and mechanics who may be employed to carry on expeditiously the Work contemplated by this Contract as a result of such restrictions upon the number of hours and Days of labor, and the immediate commencement or prosecution or completion without undue delay of the Work is necessary for the preservation of the Site and/or for the protection of the life and limb of the persons using the same, such laborers, workers, and mechanics shall be permitted or required to

work more than eight (8) hours in any one (1) Day; or five (5) Days in any one (1) week; provided, however, that upon application of any Contractor, the Commissioner shall have first certified to the Commissioner of Labor of the State of New York (hereinafter "Commissioner of Labor") that such public Work is of an important nature and that a delay in carrying it to completion would result in serious disadvantage to the public; and provided, further, that such Commissioner of Labor shall have determined that such an emergency does in fact exist as provided in Labor Law Section 220.2.

37.2.3 Failure of the Commissioner to make such a certification to the Commissioner of Labor shall not entitle the Contractor to damages for delay or for any cause whatsoever.

37.2.4 Prevailing Rate of Wages: The wages to be paid for a legal day's Work to laborers, workers, or mechanics employed upon the Work contemplated by this Contract or upon any materials to be used thereon shall not be less than the "prevailing rate of wage" as defined in Labor Law Section 220, and as fixed by the Comptroller in the attached Schedule of Wage Rates and in updated schedules thereof. The prevailing wage rates and supplemental benefits to be paid are those in effect at the time the Work is being performed.

37.2.5 Requests for interpretation or correction in the Information for Bidders includes all requests for clarification of the classification of trades to be employed in the performance of the Work under this Contract. In the event that a trade not listed in the Contract is in fact employed during the performance of this Contract, the Contractor shall be required to obtain from the Agency the prevailing wage rates and supplementary benefits for the trades used and to complete the performance of this Contract at the price at which the Contract was awarded.

37.2.6 Minimum Wages: Except for employees whose wage is required to be fixed pursuant to Labor Law Section 220, all persons employed by the Contractor and any Subcontractor in the manufacture or furnishing of the supplies, materials, or equipment, or the furnishing of work, labor, or services, used in the performance of this Contract, shall be paid, without subsequent deduction or rebate unless expressly authorized by Law, not less than the sum mandated by Law.

37.3 Working Conditions: No part of the Work, labor or services shall be performed or rendered by the Contractor in any plants, factories, buildings or surroundings or under working conditions which are unsanitary or hazardous or dangerous to the health and safety of employees engaged in the performance of this Contract. Compliance with the safety, sanitary, and factory inspection Laws of the state in which the Work is to be performed shall be prima facie evidence of compliance with this Article 37.3.

37.4 Prevailing Wage Enforcement: The Contractor agrees to pay for all costs incurred by the City in enforcing prevailing wage requirements, including the cost of any investigation conducted by or on behalf of the Agency or the Comptroller, where the City discovers a failure to comply with any of the requirements of this Article 37 by the Contractor or its Subcontractor(s). The Contractor also agrees that, should it fail or refuse to pay for any such investigation, the Agency is hereby authorized to deduct from a Contractor's account an amount equal to the cost of such investigation.

37.4.1 The Labor Law Section 220 and Section 220-d, as amended, provide that this Contract shall be forfeited and no sum paid for any Work done hereunder on a second conviction for willfully paying less than:

37.4.1(a) The stipulated prevailing wage scale as provided in Labor Law section 220, as amended, or

37.4.1(b) The stipulated minimum hourly wage scale as provided in Labor Law section 220-d, as amended.

37.4.2 For any breach or violation of either working conditions (Article 37.3) or minimum wages (Article 37.2.6) provisions, the party responsible therefor shall be liable to the City for liquidated damages, which may be withheld from any amounts due on any contracts with the City of such party responsible, or may be recovered in actions brought by the City Corporation Counsel in the name of the City, in addition to damages for any other breach of this Contract, for a sum equal to the amount of any underpayment of wages due to any employee engaged in the performance of this Contract. In addition, the Commissioner shall have the right to cancel contracts and enter into other contracts for the completion of the original contract, with or without public letting, and the original Contractor shall be liable for any additional cost. All sums withheld or recovered as deductions, rebates, refunds, or underpayment of wages hereunder, shall be held in a special deposit account and shall be paid without interest, on order of the Comptroller, directly to the employees who have been paid less than minimum rates of pay as set forth herein and on whose account such sums were withheld or recovered, provided that no claims by employees for such payments shall be entertained unless made within two (2) years from the date of actual notice to the Contractor of the withholding or recovery of such sums by the City.

37.4.3 A determination by the Comptroller that a Contractor and/or its Subcontractor willfully violated Labor Law Section 220 will be forwarded to the City's five District Attorneys for review.

37.4.4 The Contractor's or Subcontractor's noncompliance with this Article 37.4 and Labor Law Section 220 may result in an unsatisfactory performance evaluation and the Comptroller may also find and determine that the Contractor or Subcontractor willfully violated the New York Labor Law.

37.4.4(a) An unsatisfactory performance evaluation for noncompliance with this Article 37.4 may result in a determination that the Contractor is a non-responsible bidder on subsequent procurements with the City and thus a rejection of a future award of a contract with the City, as well as any other sanctions provided for by Law.

37.4.4(b) Labor Law Section 220-b, as amended, provides that when two (2) final determinations have been rendered against a Contractor or Subcontractor within any consecutive six (6) year period determining that such Contractor or Subcontractor has willfully failed to pay the prevailing rate of wages or to provide supplements in accordance with the Labor Law and this Article 37.4, whether such failures were concurrent or consecutive and whether or not such final determinations concerning separate public works projects are rendered simultaneously, such Contractor or Subcontractor shall be ineligible to submit a bid on or be awarded any public works contract with the City for a period of five (5) years from the second final determination. If the final determination involves the falsification of payroll records or the kickback of wages or supplements, the Contractor or Subcontractor shall be ineligible to submit a bid on or be awarded any public works contract with the City for a period of five (5) years from the first final determination.

37.4.4(c) Labor Law Section 220, as amended, provides that the Contractor or Subcontractor found to have violated this Article 37.4 may be directed to make payment of wages or supplements including interest found to be due, and the Contractor or Subcontractor may be directed to make payment of a further sum as

a civil penalty in an amount not exceeding twenty-five (25%) percent of the total amount found to be due.

37.5 The Contractor and its Subcontractors shall within ten (10) Days after mailing of a Notice of Award or written order, post in prominent and conspicuous places in each and every plant, factory, building, and structure where employees of the Contractor and its Subcontractors engaged in the performance of this Contract are employed, notices furnished by the City, in relation to prevailing wages and supplements, minimum wages, and other stipulations contained in Sections 220 and 220-h of the Labor Law, and the Contractor and its Subcontractors shall continue to keep such notices posted in such prominent and conspicuous places until Final Acceptance of the supplies, materials, equipment, or Work, labor, or services required to be furnished or rendered under this Contract.

37.6 The Contractor shall strictly comply with all of the provisions of Articles 37.6.1 through 37.6.5, and provide for all workers, laborers or mechanics in its employ, the following:

37.6.1 Notices Posted At Site: Post, in a location designated by the City, schedules of prevailing wages and supplements for this Project, a copy of all re-determinations of such schedules for the Project, the Workers' Compensation Law Section 51 notice, all other notices required by Law to be posted at the Site, the City notice that this Project is a public works project on which each worker is entitled to receive the prevailing wages and supplements for the occupation at which he or she is working, and all other notices which the City directs the Contractor to post. The Contractor shall provide a surface for such notices which is satisfactory to the City. The Contractor shall maintain and keep current such notices in a legible manner and shall replace any notice or schedule which is damaged, defaced, illegible or removed for any reason. The Contractor shall post such notices before commencing any Work on the Site and shall maintain such notices until all Work on the Site is complete; and

37.6.2 Daily Site Sign-in Sheets: Maintain daily Site sign-in sheets, and require that Subcontractors maintain daily Site sign-in sheets for its employees, which include blank spaces for an employee's name to be both printed and signed, job title, date started and Social Security number, the time the employee began work and the time the employee left work, until Final Acceptance of the supplies, materials, equipment, or Work, labor, or services to be furnished or rendered under this Contract unless exception is granted by the Comptroller upon application by the Agency. In the alternative, subject to the approval of the CCPO, the Contractor and Subcontractor may maintain an electronic or biometric sign-in system, which provides the information required by this Article 37.6.2; and

37.6.3 Individual Employee Information Notices: Distribute a notice to each worker, laborer or mechanic employed under this Contract, in a form provided by the Agency, that this Project is a public works project on which each worker, laborer or mechanic is entitled to receive the prevailing rate of wages and supplements for the occupation at which he or she is working. If the total cost of the Work under this Contract is at least two hundred fifty thousand (\$250,000) dollars, such notice shall also include a statement that each worker, laborer or mechanic must be certified prior to performing any Work as having successfully completed a course in construction safety and health approved by the United States Department of Labor's Occupational Safety and Health Administration that is at least ten (10) hours in duration. Such notice shall be distributed to each worker before he or she starts performing any Work of this Contract and with the first paycheck after July first of each year. "Worker, laborer or mechanic" includes employees of the Contractor and all Subcontractors and all employees of suppliers entering the Site. At the time of distribution, the Contractor shall have each worker, laborer or mechanic sign a statement, in a form provided by the Agency, certifying that the worker has received the notice required by this

Article 37.6.3, which signed statement shall be maintained with the payroll records required by this Contract; and

37.6.3(a) The Contractor and each Subcontractor shall notify each worker, laborer or mechanic employed under this Contract in writing of the prevailing rate of wages for their particular job classification. Such notification shall be given to every worker, laborer, and mechanic on their first pay stub and with every pay stub thereafter; and

37.6.4 Site Laminated Identification Badges: The Contractor shall provide laminated identification badges which include a photograph of the worker's, laborer's or mechanic's face and indicate the worker's, laborer's or mechanic's name, trade, employer's name, and employment starting date (month/day/year). Further, the Contractor shall require as a condition of employment on the Site, that each and every worker, laborer or mechanic wear the laminated identification badge at all times and that it may be seen by any representative of the City. The Commissioner may grant a written waiver from the requirement that the laminated identification badge include a photograph if the Contractor demonstrates that the identity of an individual wearing a laminated identification badge can be easily verified by another method; and

37.6.5 Language Other Than English Used On Site: Provide the ACCO notice when three (3) or more employees (worker and/or laborer and/or mechanic) on the Site, at any time, speak a language other than English. The ACCO will then provide the Contractor the notices described in Article 37.6.1 in that language or languages as may be required. The Contractor is responsible for all distributions under this Article 37; and

37.6.6 Provision of Records: The Contractor and Subcontractor(s) shall produce within five (5) Days on the Site of the Work and upon a written order of the Engineer, the Commissioner, the ACCO, the Agency EAO, or the Comptroller, such records as are required to be kept by this Article 37.6; and

37.6.7 The Contractor and Subcontractor(s) shall pay employees by check or direct deposit. If this Contract is for an amount greater than one million (\$1,000,000) dollars, checks issued by the Contractor to covered employees shall be generated by a payroll service or automated payroll system (an in-house system may be used if approved by the Agency). For any subcontract for an amount greater than seven hundred fifty thousand (\$750,000) dollars, checks issued by a Subcontractor to covered employees shall be generated by a payroll service or automated payroll system (an in-house system may be used if approved by the Agency); and

37.6.8 The failure of the Contractor or Subcontractor(s) to comply with the provisions of Articles 37.6.1 through 37.6.7 may result in the Commissioner declaring the Contractor in default and/or the withholding of payments otherwise due under the Contract.

37.7 The Contractor and its Subcontractors shall keep such employment and payroll records as are required by Section 220 of the Labor Law. The failure of the Contractor or Subcontractor(s) to comply with the provisions of this Article 37.7 may result in the Commissioner declaring the Contractor in default and/or the withholding of payments otherwise due under the Contract.

37.8 At the time the Contractor makes application for each partial payment and for final payment, the Contractor shall submit to the Commissioner a written payroll certification, in the form provided by this Contract, of compliance with the prevailing wage, minimum wage, and other provisions and stipulations required by Labor Law Section 220 and of compliance with the training requirements of

Labor Law Section 220-h set forth in Article 35.2. This certification of compliance shall be a condition precedent to payment and no payment shall be made to the Contractor unless and until each such certification shall have been submitted to and received by the Commissioner.

37.9 This Contract is executed by the Contractor with the express warranty and representation that the Contractor is not disqualified under the provisions of Section 220 of the Labor Law from the award of the Contract.

37.10 Any breach or violation of any of the foregoing shall be deemed a breach or violation of a material provision of this Contract, and grounds for cancellation thereof by the City.

ARTICLE 38. PAYROLL REPORTS

38.1 The Contractor and its Subcontractor(s) shall maintain on the Site during the performance of the Work the original payrolls or transcripts thereof which the Contractor and its Subcontractor(s) are required to maintain and shall submit such original payrolls or transcripts, subscribed and affirmed by it as true, within thirty (30) Days after issuance of its first payroll, and every thirty (30) Days thereafter, pursuant to Labor Law Section 220(3-a)(a)(iii). The Contractor and Subcontractor(s) shall submit such original payrolls or transcripts along with each and every payment requisition. If payment requisitions are not submitted at least once a month, the Contractor and its Subcontractor(s) shall submit original payrolls and transcripts both along with its payment requisitions and independently of its payment requisitions.

38.2 The Contractor shall maintain payrolls or transcripts thereof for six (6) years from the date of completion of the Work on this Contract. If such payrolls and transcripts are maintained outside of New York City after the completion of the Work and their production is required pursuant to this Article 38, the Contractor shall produce such records in New York City upon request by the City.

38.3 The Contractor and Subcontractor(s) shall comply with any written order, direction, or request made by the Engineer, the Commissioner, the ACCO, the Agency EAO, the Agency Labor Law Investigator(s), or the Comptroller, to provide to the requesting party any of the following information and/or records within five (5) Days of such written order, direction, or request:

38.3.1 Such original payrolls or transcripts thereof subscribed and affirmed by it as true and the statements signed by each worker pursuant to this Chapter VIII; and/or

38.3.2 Attendance sheets for each Day on which any employee of the Contractor and/or any of the Subcontractor(s) performed Work on the Site, which attendance sheet shall be in a form acceptable to the Agency and shall provide information acceptable to the Agency to identify each such employee; and/or

38.3.3 Any other information to satisfy the Engineer, the Commissioner, the ACCO, the Agency EAO; the Agency Labor Law Investigator(s) or the Comptroller, that this Chapter VIII and the Labor Law, as to the hours of employment and prevailing rates of wages and/or supplemental benefits, are being observed.

38.4 The failure of the Contractor or Subcontractor(s) to comply with the provisions of Articles 38.1 and/or 38.2 may result in the Commissioner declaring the Contractor in default and/or the withholding of payments otherwise due under the Contract.

ARTICLE 39. DUST HAZARDS

39.1 Should a harmful dust hazard be created in performing the Work of this Contract, for the elimination of which appliances or methods have been approved by the Board of Standards and Appeals of the City of New York, such appliances and methods shall be installed, maintained, and effectively operated during the continuance of such harmful dust hazard. Failure to comply with this provision after notice shall make this Contract voidable at the sole discretion of the City.

CHAPTER IX PARTIAL AND FINAL PAYMENTS

ARTICLE 40. CONTRACT PRICE

40.1 The City shall pay, and the Contractor agrees to accept, in full consideration for the Contractor's performance of the Work subject to the terms and conditions hereof, the lump sum price or unit prices for which this Contract was awarded, plus the amount required to be paid for any Extra Work ordered by the Commissioner under Article 25, less credit for any Work omitted pursuant to Article 29.

ARTICLE 41. BID BREAKDOWN ON LUMP SUM

41.1 Within fifteen (15) Days after the commencement date specified in the Notice to Proceed or Order to Work, unless otherwise directed by the Resident Engineer, the Contractor shall submit to the Resident Engineer a breakdown of its bid price, or of lump sums bid for items of the Contract, showing the various operations to be performed under the Contract, as directed in the progress schedule required under Article 9, and the value of each of such operations, the total of such items to equal the lump sum price bid. Said breakdown must be approved in writing by the Resident Engineer.

41.2 No partial payment will be approved until the Contractor submits a bid breakdown that is acceptable to the Resident Engineer.

41.3 The Contractor shall also submit such other information relating to the bid breakdown as directed by the Resident Engineer. Thereafter, the breakdown may be used only for checking the Contractor's applications for partial payments hereunder, but shall not be binding upon the City, the Commissioner, or the Engineer for any purpose whatsoever.

ARTICLE 42. PARTIAL PAYMENTS

42.1 From time to time as the Work progresses satisfactorily, but not more often than once each calendar month (except where the Commissioner approves in writing the submission of invoices on a more frequent basis and for invoices relating to Work performed pursuant to a change order), the Contractor may submit to the Engineer a requisition for a partial payment in the prescribed form, which shall contain an estimate of the quantity and the fair value of the Work done during the payment period.

42.2 Partial payments may be made for materials, fixtures, and equipment in advance of their actual incorporation in the Work, as the Commissioner may approve, and upon the terms and conditions set forth in the General Conditions.

42.3 The Contractor shall also submit to the Commissioner in connection with every application for partial payment a verified statement in the form prescribed by the Comptroller setting forth the information required under Labor Law Section 220-a.

42.4 Within thirty (30) Days after receipt of a satisfactory payment application, and within sixty (60) Days after receipt of a satisfactory payment application in relation to Work performed pursuant to a change order, the Engineer will prepare and certify, and the Commissioner will approve, a voucher for a partial payment in the amount of such approved estimate, less any and all deductions authorized to be made by the Commissioner under the terms of this Contract or by Law.

ARTICLE 43. PROMPT PAYMENT

43.1 The Prompt Payment provisions of the PPB Rules in effect at the time of the bid will be applicable to payments made under this Contract. The provisions require the payment to the Contractor of interest on payments made after the required payment date, except as set forth in the PPB Rules.

43.2 The Contractor shall submit a proper invoice to receive payment, except where the Contract provides that the Contractor will be paid at predetermined intervals without having to submit an invoice for each scheduled payment.

43.3 Determination of interest due will be made in accordance with the PPB Rules.

43.4 If the Contractor is paid interest, the proportionate share(s) of that interest shall be forwarded by the Contractor to its Subcontractor(s).

43.5 The Contractor shall pay each Subcontractor or Materialman not later than seven (7) Days after receipt of payment out of amounts paid to the Contractor by the City for Work performed by the Subcontractor or Materialman under this Contract.

43.5.1 If Contractor fails to make any payment to any Subcontractor or Materialman within seven (7) Days after receipt of payment by the City pursuant to this Article 43.5, then the Contractor shall pay interest on amounts due to such Subcontractor or Materialman at the rate of interest in effect on the date such payment is made by the Contractor computed in accordance with Section 756-b (1)(b) of the New York General Business Law. Accrual of interest shall commence on the Day immediately following the expiration of the seventh Day following receipt of payment by the Contractor from the City and shall end on the date on which payment is made.

43.6 The Contractor shall include in each of its subcontracts a provision requiring each Subcontractor to make payment to each of its Subcontractors or Materialmen for Work performed under this Contract in the same manner and within the same time period set forth above.

ARTICLE 44. SUBSTANTIAL COMPLETION PAYMENT

44.1 The Contractor shall submit with the Substantial Completion requisition:

44.1.1 A final verified statement of any pending Article 27 disputes in accordance with the PPB Rules and this Contract and any and all alleged claims against the City, in any way connected with or arising out of this Contract (including those as to which details may have been furnished pursuant to Articles 11, 27, 28, and 30) setting forth with respect to each

such claim the total amount thereof, the various items of labor and materials included therein, and the alleged value of each item; and if the alleged claim be one for delay, the alleged cause of each such delay, the period or periods of time, giving the dates when the Contractor claims the performance of the Work or a particular part thereof was delayed, and an itemized statement and breakdown of the amount claimed for each such delay.

44.1.1(a) With respect to each such claim, the Commissioner, the Comptroller and, in the event of litigation, the City Corporation Counsel shall have the same right to inspect, and to make extracts or copies of, the Contractor's books, vouchers, records, etc., as is referred to in Articles 11, 27, 28, and 30. Nothing contained in this Article 44.1.1(a) is intended to or shall relieve the Contractor from the obligation of complying strictly with Articles 11, 27, 28, and 30. The Contractor is warned that unless such claims are completely set forth as herein required, the Contractor upon acceptance of the Substantial Completion payment pursuant to this Article 44, will have waived any such claims.

44.1.2 A Final Approved Punch List.

44.1.3 Where required, a request for an extension of time to achieve Substantial Completion or final extension of time.

44.2 The Commissioner shall issue a voucher calling for payment of any part or all of the balance due for Work performed under the Contract, including monies retained under Article 21, less any and all deductions authorized to be made by the Commissioner, under this Contract or by Law, and less twice the amount the Commissioner considers necessary to ensure the completion of the balance of the Work by the Contractor. Such a payment shall be considered a partial and not a final payment. No Substantial Completion payment shall be made under this Article 44 where the Contractor failed to complete the Work within the time fixed for such completion in the Schedule A of the General Conditions, or within the time to which completion may have been extended, until an extension or extensions of time for the completion of Work have been acted upon pursuant to Article 13.

44.3 No further partial payments shall be made to the Contractor after Substantial Completion, except the Substantial Completion payment and payment pursuant to any Contractor's requisition that were properly filed with the Commissioner prior to the date of Substantial Completion; however, the Commissioner may grant a waiver for further partial payments after the date of Substantial Completion to permit payments for change order Work and/or release of retainage and deposits pursuant to Articles 21 and 24. Such waiver shall be in writing.

44.4 The Contractor acknowledges that nothing contained in this Article 44 is intended to or shall in any way diminish the force and effect of Article 13.

ARTICLE 45. FINAL PAYMENT

45.1 After completion and Final Acceptance of the Work, the Contractor shall submit all required certificates and documents, together with a requisition for the balance claimed to be due under the Contract, less the amount authorized to be retained for maintenance under Article 24. Such submission shall be within 90 days of the date of the Commissioner's written determination of Final Acceptance, or within such additional time as may be granted by the Commissioner in writing. If the Contractor fails to submit all required certificates and documents within the time allowed, no payment of the balance claimed shall be made to the Contractor and the Contractor shall be deemed to have forfeited its right to

payment of any balance claimed. A verified statement similar to that required in connection with applications for partial payments shall also be submitted to the Commissioner.

45.2 Amended Verified Statement of Claims: The Contractor shall also submit with the final requisition any amendments to the final verified statement of any pending dispute resolution procedures in accordance with the PPB Rules and this Contract and any and all alleged claims against the City, in any way connected with or arising out of this Contract (including those as to which details may have been furnished pursuant to Articles 11, 27, 28, and 30) that have occurred subsequent to Substantial Completion, setting forth with respect to each such claim the total amount thereof, the various items of labor and materials included therein, and the alleged value of each such item; and if the alleged claim be one for delay, the alleged cause of each such delay, the period or periods of time, giving the dates when the Contractor claims the performance of the Work or a particular part thereof was delayed, and an itemized statement and breakdown of the amount claimed for each such delay. With reference to each such claim, the Commissioner, the Comptroller and, in the event of litigation, the City Corporation Counsel shall have the same right to inspect, and to make extracts or copies of, the Contractor's books, vouchers, records, etc., as is referred to in Articles 11, 27, 28, and 30. Nothing contained in this Article 45.2, is intended to or shall relieve the Contractor from the obligation of complying strictly with Articles 11, 27, 28, and 30. The Contractor is warned that unless such claims are completely set forth as herein required, the Contractor, upon acceptance of the Final Payment pursuant to Article 46, will have waived any such claims.

45.3 Preparation of Final Voucher: Upon determining the balance due hereunder other than on account of claims, the Engineer will prepare and certify, for the Commissioner's approval, a voucher for final payment in that amount less any and all deductions authorized to be made by the Commissioner under this Contract or by Law. In the case of a lump sum Contract, the Commissioner shall certify the voucher for final payment within thirty (30) Days from the date of completion and acceptance of the Work, provided all requests for extensions of time have been acted upon.

45.3.1 All prior certificates and vouchers upon which partial payments were made, being merely estimates made to enable the Contractor to prosecute the Work more advantageously, shall be subject to correction in the final voucher, and the certification of the Engineer thereon and the approval of the Commissioner thereof, shall be conditions precedent to the right of the Contractor to receive any money hereunder. Such final voucher shall be binding and conclusive upon the Contractor.

45.3.2 Payment pursuant to such final voucher, less any deductions authorized to be made by the Commissioner under this Contract or by Law, shall constitute the final payment, and shall be made by the Comptroller within thirty (30) Days after the filing of such voucher in his/her office.

45.4. The Contractor acknowledges that nothing contained in this Article 45 is intended to or shall in any way diminish the force and effect of Article 13.

ARTICLE 46. ACCEPTANCE OF FINAL PAYMENT

46.1 The acceptance by the Contractor, or by anyone claiming by or through it, of the final payment, whether such payment be made pursuant to any judgment of any court, or otherwise, shall constitute and operate as a release of the City from any and all claims of and liability to the Contractor for anything heretofore done or furnished for the Contractor relating to or arising out of this Contract and the Work done hereunder, and for any prior act, neglect or default on the part of the City or any of its officials, agents or employees, excepting only a claim against the City for the amounts deducted or retained in accordance with the terms and provisions of this Contract or by Law, and excepting any

claims, not otherwise waived, or any pending dispute resolution procedures which are contained in the verified statement filed with the Contractor's substantial and final requisitions pursuant to Articles 44 and 45.

46.2 The Contractor is warned that the execution by it of a release, in connection with the acceptance of the final payment, containing language purporting to reserve claims other than those herein specifically excepted from the operation of this Article 46, or those for amounts deducted by the Commissioner from the final requisition or from the final payment as certified by the Engineer and approved by the Commissioner, shall not be effective to reserve such claims, anything stated to the Contractor orally or in writing by any official, agent or employee of the City to the contrary notwithstanding.

46.3 Should the Contractor refuse to accept the final payment as tendered by the Comptroller, it shall constitute a waiver of any right to interest thereon.

46.4 The Contractor, however, shall not be barred by this Article 46 from commencing an action for breach of Contract to the extent permitted by Law and by the terms of the Contract for any claims that are contained in the verified statement filed with the Contractor's substantial and final requisitions pursuant to Articles 44 and 45 or that arose after submission of the final payment requisition, provided that a detailed and verified statement of claim is served upon the contracting Agency and Comptroller not later than forty (40) Days after the making of such final payment by electronic funds transfer (EFT) or the mailing of such final payment. The statement shall specify the items upon which the claim will be based and any such claim shall be limited to such items.

ARTICLE 47. APPROVAL BY PUBLIC DESIGN COMMISSION

47.1 All works of art, including paintings, mural decorations, stained glass, statues, bas-reliefs, and other sculptures, monuments, fountains, arches, and other structures of a permanent character intended for ornament or commemoration, and every design of the same to be used in the performance of this Contract, and the design of all bridges, approaches, buildings, gates, fences, lamps, or structures to be erected, pursuant to the terms of this Contract, shall be submitted to the Art Commission, d/b/a the Public Design Commission of the City of New York, and shall be approved by the Public Design Commission prior to the erection or placing in position of the same. The final payment shall not become due or payable under this Contract unless and until the Public Design Commission shall certify that the design for the Work herein contracted for has been approved by the said Public Design Commission, and that the same has been executed in substantial accordance with the design so approved, pursuant to the provisions of Chapter 37, Section 854 of the City Charter, as amended.

CHAPTER X CONTRACTOR'S DEFAULT

ARTICLE 48. COMMISSIONER'S RIGHT TO DECLARE CONTRACTOR IN DEFAULT

48.1 In addition to those instances specifically referred to in other Articles herein, the Commissioner shall have the right to declare the Contractor in default of this Contract if:

48.1.1 The Contractor fails to commence Work when notified to do so by the Commissioner; or
if

48.1.2 The Contractor shall abandon the Work; or if

48.1.3 The Contractor shall refuse to proceed with the Work when and as directed by the Commissioner; or if

48.1.4 The Contractor shall, without just cause, reduce its working force to a number which, if maintained, would be insufficient, in the opinion of the Commissioner, to complete the Work in accordance with the progress schedule; or if

48.1.5 The Contractor shall fail or refuse to increase sufficiently such working force when ordered to do so by the Commissioner; or if

48.1.6 The Contractor shall sublet, assign, transfer, convert or otherwise dispose of this Contract other than as herein specified; or sell or assign a majority interest in the Contractor; or if

48.1.7 The Contractor fails to secure and maintain all required insurance; or if

48.1.8 A receiver or receivers are appointed to take charge of the Contractor's property or affairs; or if

48.1.9 The Commissioner shall be of the opinion that the Contractor is or has been unnecessarily or unreasonably or willfully delaying the performance and completion of the Work, or the award of necessary subcontracts, or the placing of necessary material and equipment orders; or if

48.1.10 The Commissioner shall be of the opinion that the Contractor is or has been willfully or in bad faith violating any of the provisions of this Contract; or if

48.1.11 The Commissioner shall be of the opinion that the Work cannot be completed within the time herein provided therefor or within the time to which such completion may have been extended; provided, however, that the impossibility of timely completion is, in the Commissioner's opinion, attributable to conditions within the Contractor's control; or if

48.1.12 The Work is not completed within the time herein provided therefor or within the time to which the Contractor may be entitled to have such completion extended; or if

48.1.13 Any statement or representation of the Contractor in the Contract or in any document submitted by the Contractor with respect to the Work, the Project, or the Contract (or for purposes of securing the Contract) was untrue or incorrect when made; or if

48.1.14 The Contractor or any of its officers, directors, partners, five (5%) percent shareholders, principals, or other persons substantially involved in its activities, commits any of the acts or omissions specified as the grounds for debarment in the PPB Rules.

48.2 Before the Commissioner shall exercise his/her right to declare the Contractor in default, the Commissioner shall give the Contractor an opportunity to be heard, upon not less than two (2) Days notice.

ARTICLE 49. EXERCISE OF THE RIGHT TO DECLARE DEFAULT

49.1 The right to declare the Contractor in default for any of the grounds specified or referred to in Article 48 shall be exercised by sending the Contractor a notice, signed by the Commissioner, setting forth the ground or grounds upon which such default is declared (hereinafter referred to as a "Notice of Default").

49.2 The Commissioner's determination that the Contractor is in default shall be conclusive, final, and binding on the parties and such a finding shall preclude the Contractor from commencing a plenary action for any damages relating to the Contract. If the Contractor protests the determination of the Commissioner, the Contractor may commence an action in a court of competent jurisdiction of the State of New York under Article 78 of the New York Civil Practice Law and Rules.

ARTICLE 50. QUITTING THE SITE

50.1 Upon receipt of such notice the Contractor shall immediately discontinue all further operations under this Contract and shall immediately quit the Site, leaving untouched all plant, materials, equipment, tools, and supplies then on the Site.

ARTICLE 51. COMPLETION OF THE WORK

51.1 The Commissioner, after declaring the Contractor in default, may then have the Work completed by such means and in such manner, by contract with or without public letting, or otherwise, as he/she may deem advisable, utilizing for such purpose such of the Contractor's plant, materials, equipment, tools, and supplies remaining on the Site, and also such Subcontractors, as he/she may deem advisable.

51.2 After such completion, the Commissioner shall make a certificate stating the expense incurred in such completion, which shall include the cost of re-letting and also the total amount of liquidated damages (at the rate provided for in the Contract) from the date when the Work should have been completed by the Contractor in accordance with the terms hereof to the date of actual completion of the Work. Such certificate shall be binding and conclusive upon the Contractor, its sureties, and any person claiming under the Contractor, as to the amount thereof.

51.3 The expense of such completion, including any and all related and incidental costs, as so certified by the Commissioner, and any liquidated damages assessed against the Contractor, shall be charged against and deducted out of monies which are earned by the Contractor prior to the date of default. Should the expense of such completion, as certified by the Commissioner, exceed the total sum which would have been payable under the Contract if it had been completed by the Contractor, any excess shall be paid by the Contractor.

ARTICLE 52. PARTIAL DEFAULT

52.1 In case the Commissioner shall declare the Contractor in default as to a part of the Work only, the Contractor shall discontinue such part, shall continue performing the remainder of the Work in strict conformity with the terms of this Contract, and shall in no way hinder or interfere with any Other

Contractor(s) or persons whom the Commissioner may engage to complete the Work as to which the Contractor was declared in default.

52.2 The provisions of this Chapter relating to declaring the Contractor in default as to the entire Work shall be equally applicable to a declaration of partial default, except that the Commissioner shall be entitled to utilize for completion of the part of the Work as to which the Contractor was declared in default only such plant, materials, equipment, tools, and supplies as had been previously used by the Contractor on such part.

ARTICLE 53. PERFORMANCE OF UNCOMPLETED WORK

53.1 In completing the whole or any part of the Work under the provisions of this Chapter X, the Commissioner shall have the power to depart from or change or vary the terms and provisions of this Contract, provided, however, that such departure, change or variation is made for the purpose of reducing the time or expense of such completion. Such departure, change or variation, even to the extent of accepting a lesser or different performance, shall not affect the conclusiveness of the Commissioner's certificate of the cost of completion referred to in Article 51, nor shall it constitute a defense to an action to recover the amount by which such certificate exceeds the amount which would have been payable to the Contractor hereunder but for its default.

ARTICLE 54. OTHER REMEDIES

54.1 In addition to the right to declare the Contractor in default pursuant to this Chapter X, the Commissioner shall have the absolute right, in his/her sole discretion and without a hearing, to complete or cause to be completed in the same manner as described in Articles 51 and 53, any or all unsatisfactory or uncompleted punch list Work that remains after the completion date specified in the Final Approved Punch List. A written notice of the exercise of this right shall be sent to the Contractor who shall immediately quit the Site in accordance with the provisions of Article 50.

54.2 The expense of completion permitted under Article 54.1, including any and all related and incidental costs, as so certified by the Commissioner, shall be charged against and deducted out of monies which have been earned by the Contractor prior to the date of the exercise of the right set forth in Article 54.1; the balance of such monies, if any, subject to the other provisions of this Contract, to be paid to the Contractor without interest after such completion. Should the expense of such completion, as certified by the Commissioner, exceed the total sum which would have been payable under the Contract if it had been completed by the Contractor, any excess shall be paid by the Contractor.

54.3 The previous provisions of this Chapter X shall be in addition to any and all other remedies available under Law or in equity.

54.4 The exercise by the City of any remedy set forth herein shall not be deemed a waiver by the City of any other legal or equitable remedy contained in this Contract or provided under Law.

**CHAPTER XI
MISCELLANEOUS PROVISIONS**

ARTICLE 55. CONTRACTOR'S WARRANTIES

55.1 In consideration of, and to induce, the award of this Contract to the Contractor, the Contractor represents and warrants:

55.1.1 That it is financially solvent, sufficiently experienced and competent to perform the Work; and

55.1.2 That the facts stated in its bid and the information given by it pursuant to the Information for Bidders is true and correct in all respects; and

55.1.3 That it has read and complied with all requirements set forth in the Contract.

ARTICLE 56. CLAIMS AND ACTIONS THEREON

56.1 Any claim, that is not subject to dispute resolution under the PPB Rules or this Contract, against the City for damages for breach of Contract shall not be made or asserted in any action, unless the Contractor shall have strictly complied with all requirements relating to the giving of notice and of information with respect to such claims, as herein before provided.

56.2 Nor shall any action be instituted or maintained on any such claims unless such action is commenced within six (6) months after Substantial Completion; except that:

56.2.1 Any claims arising out of events occurring after Substantial Completion and before Final Acceptance of the Work shall be asserted within six (6) months of Final Acceptance of the Work;

56.2.2 Any claims for monies deducted, retained or withheld under the provisions of this Contract shall be asserted within six (6) months after the date when such monies otherwise become due and payable hereunder; and

56.2.3 If the Commissioner exercises his/her right to terminate the Contract pursuant to Article 64, any such action shall be commenced within six (6) months of the date the Commissioner exercises said right.

ARTICLE 57. INFRINGEMENT

57.1 The Contractor shall be solely responsible for and shall defend, indemnify, and hold the City harmless from any and all claims (even if the allegations of the lawsuit are without merit) and judgments for damages and from costs and expenses to which the City may be subject to or which it may suffer or incur allegedly arising out of or in connection with any infringement by the Contractor of any copyright, trade secrets, trademark or patent rights or any other property or personal right of any third party by the Contractor and/or its Subcontractors in the performance or completion of the Work. Insofar as the facts or Law relating to any claim would preclude the City from being completely indemnified by the Contractor, the City shall be partially indemnified by the Contractor to the fullest extent permitted by Law.

ARTICLE 58. NO CLAIM AGAINST OFFICIALS, AGENTS OR EMPLOYEES

58.1 No claim whatsoever shall be made by the Contractor against any official, agent or employee of the City for, or on account of, anything done or omitted to be done in connection with this Contract.

ARTICLE 59. SERVICE OF NOTICES

59.1 The Contractor hereby designates the business address, fax number, and email address specified in its bid, as the place where all notices, directions or other communications to the Contractor may be delivered, or to which they may be mailed. Any notice, direction, or communication from either party to the other shall be in writing and shall be deemed to have been given when (i) delivered personally; (ii) sent by certified mail, return receipt requested; (iii) delivered by overnight or same day courier service in a properly addressed envelope with confirmation; or (iv) sent by fax or email and, unless receipt of the fax or e-mail is acknowledged by the recipient by fax or e-mail, deposited in a post office box regularly maintained by the United States Postal Service in a properly addressed, postage pre-paid envelope.

59.2 Contractor's notice address, email address, or fax number may be changed at any time by an instrument in writing, executed and acknowledged by the Contractor, and delivered to the Commissioner.

59.3 Nothing herein contained shall, however, be deemed to preclude or render inoperative the service of any notice, direction or other communication upon the Contractor personally, or, if the Contractor is a corporation, upon any officer thereof.

ARTICLE 60. UNLAWFUL PROVISIONS DEEMED STRICKEN FROM CONTRACT

60.1 If this Contract contains any unlawful provision not an essential part of the Contract and which shall not appear to have been a controlling or material inducement to the making thereof, the same shall be deemed of no effect and shall, upon notice by either party, be deemed stricken from the Contract without affecting the binding force of the remainder.

ARTICLE 61. ALL LEGAL PROVISIONS DEEMED INCLUDED

61.1 It is the intent and understanding of the parties to this Contract that each and every provision of Law required to be inserted in this Contract shall be and is inserted herein. Furthermore, it is hereby stipulated that every such provision is to be deemed to be inserted herein, and if, through mistake or otherwise, any such provision is not inserted, or is not inserted in correct form, then this Contract shall forthwith upon the application of either party be amended by such insertion so as to comply strictly with the Law and without prejudice to the rights of either party hereunder.

ARTICLE 62. TAX EXEMPTION

62.1 The City is exempt from payment of Federal, State, and local taxes, including sales and compensating use taxes of the State of New York and its cities and counties on all tangible personal property sold to the City pursuant to the provisions of this Contract. These taxes are not to be included in bids. However, this exemption does not apply to tools, machinery, equipment or other property leased by or to the Contractor, Subcontractor or Materialman or to tangible personal property which, even

though it is consumed, is not incorporated into the completed Work (consumable supplies) and tangible personal property that the Contractor is required to remove from the Site during or upon completion of the Work. The Contractor and its Subcontractors and Materialmen shall be responsible for and pay any and all applicable taxes, including sales and compensating use taxes, on such leased tools, machinery, equipment or other property and upon all such consumable supplies and tangible personal property that the Contractor is required to remove from the Site during or upon completion of the Work.

62.2 The Contractor agrees to sell and the City agrees to purchase all tangible personal property, other than consumable supplies and other tangible personal property that the Contractor is required to remove from the Site during or upon completion of the Work, that is required, necessary or proper for or incidental to the construction of the Project covered by this Contract. The sum paid under this Contract for such tangible personal property shall be in full payment and consideration for the sale of such tangible personal property.

62.2.1 The Contractor agrees to construct the Project and to perform all Work, labor and services rendered, necessary, proper or incidental thereto for the sum shown in the bid for the performance of such Work, labor, and services, and the sum so paid pursuant to this Contract for such Work, labor, and services, shall be in full consideration for the performance by the Contractor of all its duties and obligations under this Contract in connection with said Work, labor, and services.

62.3 20 NYCRR Section 541.3(d) provides that a Contractor's purchases of tangible personal property that is either incorporated into real property owned by a governmental entity or purchased for and sold to a governmental entity are exempt from sales and use tax. The City shall not pay sales tax for any such tangible personal property that it purchases from the Contractor pursuant to the Contract. With respect to such tangible personal property, the Contractor, at the request of the City, shall furnish to the City such bills of sale and other instruments as may be required by the City, properly executed, acknowledged and delivered assuring to the City title to such tangible personal property, free of liens and/or encumbrances, and the Contractor shall mark or otherwise identify all such tangible personal property as the property of the City.

62.4 Title to all tangible personal property to be sold by the Contractor to the City pursuant to the provisions of the Contract shall immediately vest in and become the sole property of the City upon delivery of such tangible personal property to the Site. Notwithstanding such transfer of title, the Contractor shall have the full and continuing responsibility to install such tangible personal property in accordance with the provisions of this Contract, protect it, maintain it in a proper condition and forthwith repair, replace and make good any damage thereto, theft or disappearance thereof, and furnish additional tangible personal property in place of any that may be lost, stolen or rendered unusable, without cost to the City, until such time as the Work covered by the Contract is fully accepted by the City. Such transfer of title shall in no way affect any of the Contractor's obligations hereunder. In the event that, after title has passed to the City, any of the tangible personal property is rejected as being defective or otherwise unsatisfactory, title to all such tangible personal property shall be deemed to have been transferred back to the Contractor.

62.5 The purchase by Subcontractors or Materialmen of tangible personal property to be sold hereunder shall be a purchase or procurement for resale to the Contractor (either directly or through other Subcontractors) and therefore not subject to the aforesaid sales and compensating use taxes, provided that the subcontracts and purchase agreements provide for the resale of such tangible personal property and that such subcontracts and purchase agreements are in a form similar to this Contract with respect to the separation of the sale of consumable supplies and tangible personal property that the Contractor is required to remove from the Site during or upon completion of the Work from the Work and labor, services, and any other matters to be provided, and provided further that the subcontracts and

purchase agreements provide separate prices for tangible personal property and all other services and matters. Such separation shall actually be followed in practice, including the separation of payments for tangible personal property from the payments for other Work and labor and other things to be provided.

62.6 The Contractor and its Subcontractors and Materialmen shall furnish a Contractor Exempt Purchase Certificate to all persons, firms or corporations from which they purchase tangible personal property for the performance of the Work covered by this Contract.

62.7 In the event any of the provisions of this Article 62 shall be deemed to be in conflict with any other provisions of this Contract or create any ambiguity, then the provisions of this Article 62 shall control.

ARTICLE 63. INVESTIGATION(S) CLAUSE

63.1 The parties to this Contract agree to cooperate fully and faithfully with any investigation, audit or inquiry conducted by a United States, a State of New York (State) or a City governmental agency or authority that is empowered directly or by designation to compel the attendance of witnesses and to examine witnesses under oath, or conducted by the Inspector General of a governmental agency that is a party in interest to the transaction, submitted bid, submitted proposal, contract, lease, permit or license that is the subject of the investigation, audit or inquiry.

63.2 If any person who has been advised that his/her statement, and any information from such statement, will not be used against him/her in any subsequent criminal proceeding refuses to testify before a grand jury or other governmental agency or authority empowered directly or by designation to compel the attendance of witnesses and to examine witnesses under oath concerning the award of or performance under any transaction, agreement, lease, permit, contract, or license entered into with the City, the State, or any political subdivision or public authority thereof, or the Port Authority of New York and New Jersey, or any local development corporation within the City, or any public benefit corporation organized under the Laws of the State of New York, or;

63.3 If any person refuses to testify for a reason other than the assertion of his/her privilege against self incrimination in an investigation, audit or inquiry conducted by a City or State governmental agency or authority empowered directly or by designation to compel the attendance of witnesses and to take testimony under oath, or by the Inspector General of the governmental agency that is a party in interest in, and is seeking testimony concerning the award of, or performance under any transaction, agreement, lease, permit, contract, or license entered into with the City, the State, or any political subdivision thereof or any local development corporation within the City, then;

63.4 The Commissioner whose Agency is a party in interest to the transaction, submitted bid, submitted proposal, contract, lease, permit, or license shall convene a hearing, upon not less than five (5) Days' written notice to the parties involved to determine if any penalties should attach for the failure of a person to testify.

63.5 If any non-governmental party to the hearing requests an adjournment, the Commissioner who convened the hearing may, upon granting the adjournment, suspend any contract, lease, permit, or license, pending the final determination pursuant to Article 63.7 without the City incurring any penalty or damages for delay or otherwise.

63.6 The penalties which may attach after a final determination by the Commissioner may include but shall not exceed:

63.6.1 The disqualification for a period not to exceed five (5) years from the date of an adverse determination for any person, or any entity of which such person was a member at the time the testimony was sought, from submitting bids for, or transacting business with, or entering into or obtaining any contract, lease, permit or license with or from the City; and/or

63.6.2 The cancellation or termination of any and all such existing City contracts, leases, permits or licenses that the refusal to testify concerns and that have not been assigned as permitted under this Contract, nor the proceeds of which pledged, to an unaffiliated and unrelated institutional lender for fair value prior to the issuance of the notice scheduling the hearing, without the City incurring any penalty or damages on account of such cancellation or termination; monies lawfully due for goods delivered, work done, rentals, or fees accrued prior to the cancellation or termination shall be paid by the City.

63.7 The Commissioner shall consider and address in reaching his/her determination and in assessing an appropriate penalty the factors in Articles 63.7.1 and 63.7.2. The Commissioner may also consider, if relevant and appropriate, the criteria established in Articles 63.7.3 and 63.7.4, in addition to any other information which may be relevant and appropriate:

63.7.1 The party's good faith endeavors or lack thereof to cooperate fully and faithfully with any governmental investigation or audit, including but not limited to the discipline, discharge, or disassociation of any person failing to testify, the production of accurate and complete books and records, and the forthcoming testimony of all other members, agents, assignees or fiduciaries whose testimony is sought.

63.7.2 The relationship of the person who refused to testify to any entity that is a party to the hearing, including but not limited to, whether the person whose testimony is sought has an ownership interest in the entity and/or the degree of authority and responsibility the person has within the entity.

63.7.3 The nexus of the testimony sought to the subject entity and its contracts, leases, permits or licenses with the City.

63.7.4 The effect a penalty may have on an unaffiliated and unrelated party or entity that has a significant interest in an entity subject to penalties under Article 63.6, provided that the party or entity has given actual notice to the Commissioner upon the acquisition of the interest, or at the hearing called for in Article 63.4, gives notice and proves that such interest was previously acquired. Under either circumstance the party or entity shall present evidence at the hearing demonstrating the potential adverse impact a penalty will have on such person or entity.

63.8 Definitions:

63.8.1 The term "license" or "permit" as used in this Article 63 shall be defined as a license, permit, franchise or concession not granted as a matter of right.

63.8.2 The term "person" as used in this Article 63 shall be defined as any natural person doing business alone or associated with another person or entity as a partner, director, officer, principal or employee.

63.8.3 The term "entity" as used in this Article 63 shall be defined as any firm, partnership, corporation, association, joint venture, or person that receives monies, benefits, licenses, leases, or permits from or through the City or otherwise transacts business with the City.

63.8.4 The term "member" as used in this Article 63 shall be defined as any person associated with another person or entity as a partner, director, officer, principal or employee.

63.9 In addition to and notwithstanding any other provision of this Contract, the Commissioner may in his/her sole discretion terminate this Contract upon not less than three (3) Days' written notice in the event the Contractor fails to promptly report in writing to the Commissioner of the Department of Investigations ("DOI") of the City any solicitation of money, goods, requests for future employment or other benefit or thing of value, by or on behalf of any employee of the City or other person, firm, corporation or entity for any purpose which may be related to the procurement or obtaining of this Contract by the Contractor, or affecting the performance of this Contract.

ARTICLE 64. TERMINATION BY THE CITY

64.1 In addition to termination pursuant to any other article of this Contract, the Commissioner may, at any time, terminate this Contract by written notice to the Contractor. In the event of termination, the Contractor shall, upon receipt of such notice, unless otherwise directed by the Commissioner:

64.1.1 Stop Work on the date specified in the notice;

64.1.2 Take such action as may be necessary for the protection and preservation of the City's materials and property;

64.1.3 Cancel all cancelable orders for material and equipment;

64.1.4 Assign to the City and deliver to the Site or another location designated by the Commissioner, any non-cancelable orders for material and equipment that is not capable of use except in the performance of this Contract and has been specifically fabricated for the sole purpose of this Contract and not incorporated in the Work;

64.1.5 Take no action which will increase the amounts payable by the City under this Contract.

64.2 In the event of termination by the City pursuant to this Article 64, payment to the Contractor shall be in accordance with Articles 64.2.1, 64.2.2 or 64.2.3, to the extent that each respective article applies.

64.2.1 Lump Sum Contracts or Items: On all lump sum Contracts; or on lump sum items in a Contract, the City will pay the Contractor the sum of the amounts described in Articles 64.2.1(a) and 64.2.1(b), less all payments previously made pursuant to this Contract. On lump sum Contracts only, the City will also pay the Contractor an additional sum as provided in Article 64.2.1(c).

64.2.1(a) For Work completed prior to the notice of termination, the Contractor shall be paid a pro rata portion of the lump sum bid amount, plus approved change orders, based upon the percent completion of the Work, as determined by the Commissioner. For the purpose of determining the pro rata portion of the lump sum bid amount to which the Contractor is entitled, the bid breakdown submitted in accordance with Article 41 shall be considered, but shall not be dispositive. The Commissioner's determination hereunder shall be final, binding, and conclusive.

64.2.1(b) For non-cancelable material and equipment that is not capable of use except in the performance of this Contract and has been specifically fabricated for the sole purpose of this Contract, but not yet incorporated in the Work, the Contractor shall be paid the lesser of the following, less salvage value:

64.2.1(b)(i) The Direct Cost, as defined in Article 64.2.4; or

64.2.1(b)(ii) The fair and reasonable value, if less than Direct Cost, of such material and equipment, plus necessary and reasonable delivery costs.

64.2.1(b)(iii) In addition, the Contractor shall be paid five (5%) percent of the amount described in Article 64.2.1(b)(i) or Article 64.2.1(b)(ii), whichever applies.

64.2.1(c) Except as otherwise provided in Article 64.2.1(d), on all lump sum Contracts, the Contractor shall be paid the percentage indicated below applied to the difference between the total lump sum bid amount and the total of all payments made prior to the notice of termination plus all payments allowed pursuant to Articles 64.2.1(a) and 64.2.1(b):

64.2.1(c)(i) Five (5%) percent of the first five million (\$5,000,000) dollars; and

64.2.1(c)(ii) Three (3%) percent of any amount between five million (\$5,000,000) dollars and fifteen million (\$15,000,000) dollars; plus

64.2.1(c)(iii) One (1%) percent of any amount over fifteen million (\$15,000,000) dollars.

64.2.1(d) In the event the City terminates a lump sum Contract pursuant to this Article 64 within ninety (90) Days after registration of the Contract with the Comptroller, the Contractor shall be paid one (1%) percent of the difference between the lump sum bid amount and the total of all payments made pursuant to this Article 64.2.

64.2.2 Unit Price Contracts or Items: On all unit price Contracts, or on unit price items in a Contract, the City will pay the Contractor the sum of the amounts described in Articles 64.2.2(a) and 64.2.2(b), less all payments previously made pursuant to this Contract:

64.2.2(a) For all completed units, the unit price stated in the Contract, and

64.2.2(b) For units that have been ordered but are only partially completed, the Contractor will be paid:

64.2.2(b)(i) A pro rata portion of the unit price stated in the Contract based upon the percent completion of the unit and

64.2.2(b)(ii) For non-cancelable material and equipment, payment will be made pursuant to Article 64.2.1(b).

64.2.3 Time and Materials Contracts or Items Based on Time and Material Records: On all Contracts or items in a Contract where payment for the Work is based on time and

material records, the Contractor shall be paid in accordance with Article 26, less all payments previously made pursuant to this Contract.

64.2.4 Direct Costs: Direct Costs as used in this Article 64.2 shall mean:

64.2.4(a) The actual purchase price of material and equipment, plus necessary and reasonable delivery costs,

64.2.4(b) The actual cost of labor involved in construction and installation at the Site, and

64.2.4(c) The actual cost of necessary bonds and insurance purchased pursuant to requirements of this Contract less any amounts that have been or should be refunded by the Contractor's sureties or insurance carriers.

64.2.4(d) Direct Costs shall not include overhead.

64.3 In no event shall any payments under this Article 64 exceed the Contract price for such items.

64.4 All payments pursuant to Article 64 shall be in the nature of liquidated damages and shall be accepted by the Contractor in full satisfaction of all claims against the City.

64.5 The City may deduct or set off against any sums due and payable pursuant to this Article 64, any deductions authorized by this Contract or by Law (including but not limited to liquidated damages) and any claims it may have against the Contractor. The City's exercise of the right to terminate the Contract pursuant to this Article 64 shall not impair or otherwise effect the City's right to assert any claims it may have against the Contractor in a plenary action.

64.6 Where the Work covered by the Contract has been substantially completed, as determined in writing by the Commissioner, termination of the Work shall be handled as an omission of Work pursuant to Articles 29 and 33, in which case a change order will be issued to reflect an appropriate reduction in the Contract sum, or if the amount is determined after final payment, such amount shall be paid by the Contractor.

ARTICLE 65. CHOICE OF LAW, CONSENT TO JURISDICTION AND VENUE

65.1 This Contract shall be deemed to be executed in the City regardless of the domicile of the Contractor, and shall be governed by and construed in accordance with the Laws of the State of New York and the Laws of the United States, where applicable.

65.2 The parties agree that any and all claims asserted against the City arising under this Contract or related thereto shall be heard and determined in the courts of the State of New York ("New York State Courts") located in the City and County of New York. To effect this Contract and intent, the Contractor agrees:

65.2.1 If the City initiates any action against the Contractor in Federal court or in a New York State Court, service of process may be made on the Contractor either in person, wherever such Contractor may be found, or by registered mail addressed to the Contractor at its address as set forth in this Contract, or to such other address as the Contractor may provide to the City in writing; and

65.2.2 With respect to any action between the City and the Contractor in a New York State Court, the Contractor hereby expressly waives and relinquishes any rights it might otherwise have:

65.2.2(a) To move to dismiss on grounds of forum non conveniens;

65.2.2(b) To remove to Federal Court; and

65.2.2(c) To move for a change of venue to a New York State Court outside New York County.

65.2.3 With respect to any action brought by the City against the Contractor in a Federal Court located in the City, the Contractor expressly waives and relinquishes any right it might otherwise have to move to transfer the action to a Federal Court outside the City.

65.2.4 If the Contractor commences any action against the City in a court located other than in the City and County of New York, upon request of the City, the Contractor shall either consent to a transfer of the action to a New York State Court of competent jurisdiction located in the City and County of New York or, if the Court where the action is initially brought will not or cannot transfer the action, the Contractor shall consent to dismiss such action without prejudice and may thereafter reinstate the action in a New York State Court of competent jurisdiction in New York County.

65.3 If any provision(s) of this Article 65 is held unenforceable for any reason, each and all other provision(s) shall nevertheless remain in full force and effect.

ARTICLE 66. PARTICIPATION IN AN INTERNATIONAL BOYCOTT

66.1 The Contractor agrees that neither the Contractor nor any substantially owned affiliated company is participating or shall participate in an international boycott in violation of the provisions of the Federal Export Administration Act of 1979, as amended, or the regulations of the United States Department of Commerce (Commerce Department) promulgated thereunder.

66.2 Upon the final determination by the Commerce Department or any other agency of the United States as to, or conviction of the Contractor or a substantially-owned affiliated company thereof for participation in an international boycott in violation of the provisions of the Export Administration Act of 1979, as amended, or the regulations promulgated thereunder, the Comptroller may, at his/her option, render forfeit and void this Contract.

66.3 The Contractor shall comply in all respects, with the provisions of Section 6-114 of the Administrative Code and the rules and regulations issued by the Comptroller thereunder.

ARTICLE 67. LOCALLY BASED ENTERPRISE PROGRAM

67.1 This Contract is subject to the requirements of Section 6-108.1 of the Administrative Code and regulations promulgated thereunder. No construction contract shall be awarded unless and until these requirements have been complied with in their entirety; however, compliance with this Article 67 is not required if the Agency sets Subcontractor Participation Goals for Minority- and Women-Owned Business Enterprises (M/WBEs).

67.2 Unless specifically waived by the Commissioner with the approval of the Division of Economic and Financial Opportunity of the City Department of Business Services, if any portion of the Contract is subcontracted, not less than ten (10%) percent of the total dollar amount of the Contract shall be awarded to locally based enterprises (LBEs); except that where less than ten (10%) percent of the total dollar amount of the Contract is subcontracted, such lesser percentage shall be so awarded.

67.3 The Contractor shall not require performance and payment bonds from LBE Subcontractors.

67.4 If the Contractor has indicated prior to award that no Work will be subcontracted, no Work shall be subcontracted without the prior approval of the Commissioner, which shall be granted only if the Contractor makes a good faith effort beginning at least six (6) weeks before the Work is to be performed to obtain LBE Subcontractors to perform the Work.

67.5 If the Contractor has not identified sufficient LBE Subcontractors prior to award, it shall sign a letter of compliance stating that it complies with Section 6-108.1 of the Administrative Code, recognizes that achieving the LBE requirement is a condition of its Contract, and shall submit documentation demonstrating its good faith efforts to obtain LBEs. After award, the Contractor shall begin to solicit LBE's to perform subcontracted Work at least six (6) weeks before the date such Work is to be performed and shall demonstrate that a good faith effort has been made to obtain LBEs on each subcontract until it meets the required percentage.

67.6 Failure of the Contractor to comply with the requirements of Section 6-108.1 of the Administrative Code and the regulations promulgated thereunder shall constitute a material breach of this Contract. Remedy for such breach may include the imposition of any or all of the following sanctions:

67.6.1 Reducing the Contractor's compensation by an amount equal to the dollar value of the percentage of the LBE subcontracting requirement not complied with;

67.6.2 Declaring the Contractor in default;

67.6.3 If the Contractor is an LBE, de-certifying and declaring the Contractor ineligible to participate in the LBE program for a period of up to three (3) years.

ARTICLE 68. ANTITRUST

68.1 The Contractor hereby assigns, sells, and transfers to the City all right, title, and interest in and to any claims and causes of action arising under the antitrust Laws of New York State or of the United States relating to the particular goods or services purchased or procured by the City under this Contract.

ARTICLE 69. MacBRIDE PRINCIPLES PROVISIONS

69.1 Notice To All Prospective Contractors:

69.1.1 Local Law No. 34 of 1991 became effective on September 10, 1991 and added Section 6-115.1 of the Administrative Code. The local Law provides for certain restrictions on City Contracts to express the opposition of the people of the City to employment discrimination practices in Northern Ireland to promote freedom of work-place opportunity.

69.1.2 Pursuant to Section 6-115.1, prospective Contractors for Contracts to provide goods or services involving an expenditure of an amount greater than ten thousand

(\$10,000.) dollars, or for construction involving an amount greater than fifteen thousand (\$15,000.) dollars, are asked to sign a rider in which they covenant and represent, as a material condition of their Contract, that any business operations in Northern Ireland conducted by the Contractor and any individual or legal entity in which the Contractor holds a ten (10%) percent or greater ownership interest in the Contractor will be conducted in accordance with the MacBride Principles of nondiscrimination in employment.

69.1.3 Prospective Contractors are not required to agree to these conditions. However, in the case of Contracts let by competitive sealed bidding, whenever the lowest responsible bidder has not agreed to stipulate to the conditions set forth in this notice and another bidder who has agreed to stipulate to such conditions has submitted a bid within five (5%) percent of the lowest responsible bid for a Contract to supply goods, services or construction of comparable quality, the Agency shall refer such bids to the Mayor, the Speaker or other officials, as appropriate; who may determine, in accordance with applicable Law, that it is in the best interest of the City that the Contract be awarded to other than the lowest responsible pursuant to Section 313(b)(2) of the City Charter.

69.1.4 In the case of Contracts let by other than competitive sealed bidding, if a prospective Contractor does not agree to these conditions, no Agency, elected official or the City Council shall award the Contract to that bidder unless the Agency seeking to use the goods, services or construction certifies in writing that the Contract is necessary for the Agency to perform its functions and there is no other responsible Contractor who will supply goods, services or construction of comparable quality at a comparable price.

69.2 In accordance with Section 6-115.1 of the Administrative Code, the Contractor stipulates that such Contractor and any individual or legal entity in which the Contractor holds a ten (10%) percent or greater ownership interest in the Contractor either:

69.2.1 Have no business operations in Northern Ireland, or

69.2.2 Shall take lawful steps in good faith to conduct any business operations they have in Northern Ireland in accordance with the MacBride Principles, and shall permit independent monitoring of their compliance with such principles.

69.3 For purposes of this Article, the following terms shall have the following meanings:

69.3.1 "MacBride Principles" shall mean those principles relating to nondiscrimination in employment and freedom of work-place opportunity which require employers doing business in Northern Ireland to:

69.3.1(a) increase the representation of individuals from under-represented religious groups in the workforce, including managerial, supervisory, administrative, clerical and technical jobs;

69.3.1(b) take steps to promote adequate security for the protection of employees from under-represented religious groups both at the work-place and while traveling to and from Work;

69.3.1(c) ban provocative religious or political emblems from the workplace;

69.3.1(d) publicly advertise all job openings and make special recruitment efforts to attract applicants from under-represented religious groups;

69.3.1(e) establish layoff, recall, and termination procedures which do not in practice favor a particular religious group;

69.3.1(f) abolish all job reservations, apprenticeship restrictions and different employment criteria which discriminate on the basis of religion;

69.3.1(g) develop training programs that will prepare substantial numbers of current employees from under-represented religious groups for skilled jobs, including the expansion of existing programs and the creation of new programs to train, upgrade, and improve the skills of workers from under-represented religious groups;

69.3.1(h) establish procedures to assess, identify, and actively recruit employees from under-represented religious groups with potential for further advancement; and

69.3.1(i) appoint a senior management staff member to oversee affirmative action efforts and develop a timetable to ensure their full implementation.

69.4 The Contractor agrees that the covenants and representations in Article 69.2 are material conditions to this Contract. In the event the Agency receives information that the Contractor who made the stipulation required by this Article 69 is in violation thereof, the Agency shall review such information and give the Contractor an opportunity to respond. If the Agency finds that a violation has occurred, the Agency shall have the right to declare the Contractor in default and/or terminate this Contract for cause and procure supplies, services or Work from another source in the manner the Agency deems proper. In the event of such termination, the Contractor shall pay to the Agency, or the Agency in its sole discretion may withhold from any amounts otherwise payable to the Contractor, the difference between the Contract price for the uncompleted portion of this Contract and the cost to the Agency of completing performance of this Contract either itself or by engaging another Contractor or Contractors. In the case of a requirement Contract, the Contractor shall be liable for such difference in price for the entire amount of supplies required by the Agency for the uncompleted term of Contractor's Contract. In the case of a construction Contract, the Agency shall also have the right to hold the Contractor in partial or total default in accordance with the default provisions of this Contract, and/or may seek debarment or suspension of the Contractor. The rights and remedies of the Agency hereunder shall be in addition to, and not in lieu of, any rights and remedies the Agency has pursuant to this Contract or by operation of Law.

ARTICLE 70. ELECTRONIC FILING/NYC DEVELOPMENT HUB

70.1 The Contractor shall electronically file all alteration type-2 and alteration type-3 applications via the New York City Development Hub Web site, except applications for the following types of minor alterations: enlargements, curb cuts, legalizations, fire alarms, builders pavement plans, and jobs filed on Landmark Preservation Commission calendared properties. All such filings must be professionally certified. Information about electronic filing via the New York City Development Hub is available on the City Department of Buildings Web site at www.nyc.gov/buildings.

ARTICLE 71. PROHIBITION OF TROPICAL HARDWOODS

71.1 Tropical hardwoods, as defined in Section 165 of the New York State Finance Law (Finance Law), shall not be utilized in the performance of this Contract except as expressly permitted by Section 165 of the Finance Law.

ARTICLE 72. CONFLICTS OF INTEREST

72.1 Section 2604 of the City Charter and other related provisions of the City Charter, the Administrative Code, and the Penal Law are applicable under the terms of this Contract in relation to conflicts of interest and shall be extended to Subcontractors authorized to perform Work, labor and services pursuant to this Contract and further, it shall be the duty and responsibility of the Contractor to so inform its respective Subcontractors. Notice is hereby given that, under certain circumstances, penalties may be invoked against the donor as well as the recipient of any form of valuable gift.

ARTICLE 73. MERGER CLAUSE

73.1 The written Contract herein, contains all the terms and conditions agreed upon by the parties hereto, and no other agreement, oral or otherwise, regarding the subject matter of this Contract shall be deemed to exist or to bind any of the parties hereto, or to vary any of the terms contained herein.

ARTICLE 74. STATEMENT OF WORK

74.1 The Contractor shall furnish all labor and materials and perform all Work in strict accordance with the Specifications and Addenda thereto, numbered three.

ARTICLE 75. COMPENSATION TO BE PAID TO CONTRACTOR

75.1 The City will pay and the Contractor will accept in full consideration for the performance of the Contract, subject to additions and deductions as provided herein, the total sum of: two million nine hundred dollars, (\$ 2,999,964.00), this said sum being the amount at which the Contract was awarded to the Contractor at a public letting thereof, based upon the Contractor's bid for the Contract. forty nine thousand nine hundred sixty four

ARTICLE 76. ELECTRONIC FUNDS TRANSFER

76.1 In accordance with Section 6-107.1 of the Administrative Code, the Contractor agrees to accept payments under this Contract from the City by electronic funds transfer (EFT). An EFT is any transfer of funds, other than a transaction originated by check, draft or similar paper instrument, which is initiated through an electronic terminal, telephonic instrument or computer or magnetic tape so as to order, instruct or authorize a financial institution to debit or credit an account. Prior to the first payment made under this Contract, the Contractor shall designate one financial institution or other authorized payment agent and shall complete the attached "EFT Vendor Payment Enrollment Form" in order to provide the Commissioner of the City Department of Finance with information necessary for the Contractor to receive electronic funds transfer payments through a designated financial institution or authorized payment agent. The crediting of the amount of a payment to the appropriate account on the books of a financial institution or other authorized payment agent designated by the Contractor shall constitute full satisfaction by the City for the amount of the payment under this Contract. The account information supplied by the Contractor to facilitate the electronic funds transfer shall remain confidential to the fullest extent provided by Law.

76.2 The Commissioner may waive the application of the requirements of this Article 76 to payments on contracts entered into pursuant to Section 315 of the City Charter. In addition, the Commissioner of the Department of Finance and the Comptroller may jointly issue standards pursuant to

which the Agency may waive the requirements of this Article 76 for payments in the following circumstances: (i) for individuals or classes of individuals for whom compliance imposes a hardship; (ii) for classifications of types of checks; or (iii) in other circumstances as may be necessary in the interest of the City.

ARTICLE 77. RECORDS RETENTION

77.1 The Contractor agrees to retain all books, records, and other documents relevant to this Contract for six years after the final payment or termination of this Contract, whichever is later. City, state, and federal auditors and any other persons duly authorized by the City shall have full access to and the right to examine any such books, records, and other documents during the retention period.

ARTICLE 78. PARTICIPATION BY MINORITY-OWNED AND WOMEN-OWNED BUSINESS ENTERPRISES IN CITY PROCUREMENT

NOTICE TO ALL PROSPECTIVE CONTRACTORS

ARTICLE I. M/WBE PROGRAM

Local Law No. 129 of 2005 added and Local Law 1 of 2013 amended Section 6-129 of the Administrative Code of the City of New York (hereinafter "Section 6-129"). Section 6-129 establishes the program for participation in City procurement ("M/WBE Program") by minority-owned business enterprises ("MBEs") and women-owned business enterprises ("WBEs"), certified in accordance with Section 1304 of the New York City Charter. As stated in Section 6-129, the intent of the program is to address the impact of discrimination on the City's procurement process, and to promote the public interest in avoiding fraud and favoritism in the procurement process, increasing competition for City business, and lowering contract costs. The contract provisions contained herein are pursuant to Section 6-129, and the rules of the Department of Small Business Services ("DSBS") promulgated thereunder.

If this Contract is subject to the M/WBE Program established by Section 6-129, the specific requirements of MBE and/or WBE participation for this Contract are set forth in Schedule B of the Contract (entitled the "M/WBE Utilization Plan"), and are detailed below. The Contractor must comply with all applicable MBE and WBE requirements for this Contract.

All provisions of Section 6-129 are hereby incorporated in the Contract by reference and all terms used herein that are not defined herein shall have the meanings given such terms in Section 6-129. Article I, Part A, below, sets forth provisions related to the participation goals for construction, standard and professional services contracts. Article I, Part B, below, sets forth miscellaneous provisions related to the M/WBE Program.

PART A

PARTICIPATION GOALS FOR CONSTRUCTION, STANDARD AND PROFESSIONAL SERVICES CONTRACTS OR TASK ORDERS

1. The MBE and/or WBE Participation Goals established for this Contract or Task Orders issued pursuant to this Contract, ("Participation Goals"), as applicable, are set forth on Schedule B, Part I to this Contract (see Page 1, line 1 Total Participation Goals) or will be set forth on Schedule B, Part I to Task Orders issued pursuant to this Contract, as applicable.

The Participation Goals represent a percentage of the total dollar value of the Contract or Task Order, as applicable, that may be achieved by awarding subcontracts to firms certified with New York City Department of Small Business Services as MBEs and/or WBEs, and/or by crediting the participation of prime contractors and/or qualified joint ventures as provided in Section 3 below, unless the goals have been waived or modified by Agency in accordance with Section 6-129 and Part A, Sections 10 and 11 below, respectively.

2. If Participation Goals have been established for this Contract or Task Orders issued pursuant to this Contract, Contractor agrees or shall agree as a material term of the Contract that Contractor shall be subject to the Participation

Goals, unless the goals are waived or modified by Agency in accordance with Section 6-129 and Part A, Sections 10 and 11 below, respectively.

3. If Participation Goals have been established for this Contract or Task Order issued pursuant to this Contract, a Contractor that is an MBE and/or WBE shall be permitted to count its own participation toward fulfillment of the relevant Participation Goal, provided that in accordance with Section 6-129 the value of Contractor's participation shall be determined by subtracting from the total value of the Contract or Task Order, as applicable, any amounts that the Contractor pays to direct subcontractors (as defined in Section 6-129(c)(13)), and provided further that a Contractor that is certified as both an MBE and a WBE may count its own participation either toward the goal for MBEs or the goal for WBEs, but not both.

A Contractor that is a qualified joint venture (as defined in Section 6-129(c)(30)) shall be permitted to count a percentage of its own participation toward fulfillment of the relevant Participation Goal. In accordance with Section 6-129, the value of Contractor's participation shall be determined by subtracting from the total value of the Contract or Task Order, as applicable, any amounts that Contractor pays to direct subcontractors, and then multiplying the remainder by the percentage to be applied to total profit to determine the amount to which an MBE or WBE is entitled pursuant to the joint venture agreement, provided that where a participant in a joint venture is certified as both an MBE and a WBE, such amount shall be counted either toward the goal for MBEs or the goal for WBEs, but not both.

4. A. If Participation Goals have been established for this Contract, a prospective contractor shall be required to submit with its bid or proposal, as applicable, a completed Schedule B, M/WBE Utilization Plan, Part II (see Pages 2-4) indicating: (a) whether the contractor is an MBE or WBE, or qualified joint venture; (b) the percentage of work it intends to award to direct subcontractors; and (c) in cases where the contractor intends to award direct subcontracts, a description of the type and dollar value of work designated for participation by MBEs and/or WBEs, and the time frames in which such work is scheduled to begin and end. In the event that this M/WBE Utilization Plan indicates that the bidder or proposer, as applicable, does not intend to meet the Participation Goals, the bid or proposal, as applicable, shall be deemed non-responsive, unless Agency has granted the bidder or proposer, as applicable, a pre-award waiver of the Participation Goals in accordance with Section 6-129 and Part A, Section 10 below.

B. (i) If this Contract is for a master services agreement or other requirements type contract that will result in the issuance of Task Orders that will be individually registered ("Master Services Agreement") and is subject to M/WBE Participation Goals, a prospective contractor shall be required to submit with its bid or proposal, as applicable, a completed Schedule B, M/WBE Participation Requirements for Master Services Agreements That Will Require Individually Registered Task Orders, Part II (page 2) indicating the prospective contractor's certification and required affirmations to make all reasonable good faith efforts to meet participation goals established on each individual Task Order issued pursuant to this Contract, or if a partial waiver is obtained or such goals are modified by the Agency, to meet the modified Participation Goals by soliciting and obtaining the participation of certified MBE and/or WBE firms. In the event that the Schedule B indicates that the bidder or proposer, as applicable, does not intend to meet the Participation Goals that may be established on Task Orders issued pursuant to this Contract, the bid or proposal, as applicable, shall be deemed nonresponsive.

(ii) Participation Goals on a Master Services Agreement will be established for individual Task Orders issued after the Master Services Agreement is awarded. If Participation Goals have been established on a Task Order, a contractor shall be required to submit a Schedule B - M/WBE Utilization Plan For Independently Registered Task Orders That Are Issued Pursuant to Master Services Agreements, Part II (see Pages 2-4) indicating: (a) whether the contractor is an MBE or WBE, or qualified joint venture; (b) the percentage of work it intends to award to direct subcontractors; and (c) in cases where the contractor intends to award direct subcontracts, a description of the type and dollar value of work designated for participation by MBEs and/or WBEs, and the time frames in which such work is scheduled to begin and end. The contractor must engage in good faith efforts to meet the Participation Goals as established for the Task Order unless Agency has granted the contractor a pre-award waiver of the Participation Goals in accordance with Section 6-129 and Part A, Section 10 below.

C. THE BIDDER/PROPOSER MUST COMPLETE THE SCHEDULE B INCLUDED HEREIN (SCHEDULE B, PART II). A SCHEDULE B SUBMITTED BY THE BIDDER/PROPOSER WHICH DOES NOT INCLUDE THE VENDOR CERTIFICATION AND REQUIRED AFFIRMATIONS (SEE SECTION V OF PART II) WILL BE DEEMED TO BE NON-RESPONSIVE, UNLESS A FULL WAIVER OF THE PARTICIPATION GOALS IS GRANTED (SCHEDULE B, PART III). IN THE EVENT THAT THE CITY DETERMINES THAT THE BIDDER/PROPOSER HAS SUBMITTED A SCHEDULE B WHERE THE VENDOR CERTIFICATION AND REQUIRED AFFIRMATIONS ARE COMPLETED BUT OTHER

ASPECTS OF THE SCHEDULE B ARE NOT COMPLETE, OR CONTAIN A COPY OR COMPUTATION ERROR THAT IS AT ODDS WITH THE VENDOR CERTIFICATION AND AFFIRMATIONS, THE BIDDER/PROPOSER WILL BE NOTIFIED BY THE AGENCY AND WILL BE GIVEN FOUR (4) CALENDAR DAYS FROM RECEIPT OF NOTIFICATION TO CURE THE SPECIFIED DEFICIENCIES AND RETURN A COMPLETED SCHEDULE B TO THE AGENCY. FAILURE TO DO SO WILL RESULT IN A DETERMINATION THAT THE BID/PROPOSAL IS NON-RESPONSIVE. RECEIPT OF NOTIFICATION IS DEFINED AS THE DATE NOTICE IS E-MAILED OR FAXED (IF THE BIDDER/PROPOSER HAS PROVIDED AN E-MAIL ADDRESS OR FAX NUMBER), OR NO LATER THAN FIVE (5) CALENDAR DAYS FROM THE DATE OF MAILING OR UPON DELIVERY, IF DELIVERED.

5. Where an M/WBE Utilization Plan has been submitted, the Contractor shall, within 30 days of issuance by Agency of a notice to proceed, submit a list of proposed persons or entities to which it intends to award subcontracts within the subsequent 12 months. In the case of multiyear contracts, such list shall also be submitted every year thereafter. The Agency may also require the Contractor to report periodically about the contracts awarded by its direct subcontractors to indirect subcontractors (as defined in Section 6-129(c)(22)). PLEASE NOTE: If this Contract is a public works project subject to GML §101(5) (i.e., a contract valued at or below \$3M for projects in New York City) or if the Contract is subject to a project labor agreement in accordance with Labor Law §222, and the bidder is required to identify at the time of bid submission its intended subcontractors for the Wicks trades (plumbing and gas fitting; steam heating, hot water heating, ventilating and air conditioning (HVAC); and electric wiring), the Contractor must identify all those to which it intends to award construction subcontracts for any portion of the Wicks trade work at the time of bid submission, regardless of what point in the life of the contract such subcontracts will occur. In identifying intended subcontractors in the bid submission, bidders may satisfy any Participation Goals established for this Contract by proposing one or more subcontractors that are MBEs and/or WBEs for any portion of the Wicks trade work. In the event that the Contractor's selection of a subcontractor is disapproved, the Contractor shall have a reasonable time to propose alternate subcontractors.

6. MBE and WBE firms must be certified by DSBS in order for the Contractor to credit such firms' participation toward the attainment of the Participation Goals. Such certification must occur prior to the firms' commencement of work. A list of MBE and WBE firms may be obtained from the DSBS website at www.nyc.gov/buycertified, by emailing DSBS at buyer@sbs.nyc.gov, by calling (212) 513-6356, or by visiting or writing DSBS at 110 William St., New York, New York, 10038, 7th floor. Eligible firms that have not yet been certified may contact DSBS in order to seek certification by visiting www.nyc.gov/getcertified, emailing MWBE@sbs.nyc.gov, or calling the DSBS certification helpline at (212) 513-6311. A firm that is certified as both an MBE and a WBE may be counted either toward the goal for MBEs or the goal for WBEs, but not both. No credit shall be given for participation by a graduate MBE or graduate WBE, as defined in Section 6-129(c)(20).

7. Where an M/WBE Utilization Plan has been submitted, the Contractor shall, with each voucher for payment, and/or periodically as Agency may require, submit statements, certified under penalty of perjury, which shall include, but not be limited to, the total amount the Contractor paid to its direct subcontractors, and, where applicable pursuant to Section 6-129(j), the total amount direct subcontractors paid to indirect subcontractors; the names, addresses and contact numbers of each MBE or WBE hired as a subcontractor by the Contractor, and, where applicable, hired by any of the Contractor's direct subcontractors; and the dates and amounts paid to each MBE or WBE. The Contractor shall also submit, along with its voucher for final payment, the total amount it paid to subcontractors, and, where applicable pursuant to Section 6-129(j), the total amount its direct subcontractors paid directly to their indirect subcontractors; and a final list, certified under penalty of perjury, which shall include the name, address and contact information of each subcontractor that is an MBE or WBE, the work performed by, and the dates and amounts paid to each.

8. If payments made to, or work performed by, MBEs or WBEs are less than the amount specified in the Contractor's M/WBE Utilization Plan, Agency shall take appropriate action, in accordance with Section 6-129 and Article II below, unless the Contractor has obtained a modification of its M/WBE Utilization Plan in accordance with Section 6-129 and Part A, Section 11 below.

9. Where an M/WBE Utilization Plan has been submitted, and the Contractor requests a change order the value of which exceeds the greater of 10 percent of the Contract or Task Order, as applicable, or \$500,000, Agency shall review the scope of work for the Contract or Task Order, as applicable, and the scale and types of work involved in the change order, and determine whether the Participation Goals should be modified.

10. Pre-award waiver of the Participation Goals. (a) A bidder or proposer, or contractor with respect to a Task Order, may seek a pre-award full or partial waiver of the Participation Goals in accordance with Section 6-129, which

requests that Agency change one or more Participation Goals on the grounds that the Participation Goals are unreasonable in light of the availability of certified firms to perform the services required, or by demonstrating that it has legitimate business reasons for proposing a lower level of subcontracting in its M/WBE Utilization Plan.

(b) To apply for a full or partial waiver of the Participation Goals, a bidder, proposer, or contractor, as applicable, must complete Part III (Page 5) of Schedule B and submit such request no later than seven (7) calendar days prior to the date and time the bids, proposals, or Task Orders are due, in writing to the Agency by email at poped@ddc.nyc.gov or via facsimile at (718) 391-1886. Bidders, proposers, or contractors, as applicable, who have submitted requests will receive an Agency response by no later than two (2) calendar days prior to the due date for bids, proposals, or Task Orders; provided, however, that if that date would fall on a weekend or holiday, an Agency response will be provided by close-of-business on the business day before such weekend or holiday date.

(c) If the Agency determines that the Participation Goals are unreasonable in light of the availability of certified firms to perform the services required, it shall revise the solicitation and extend the deadline for bids and proposals, or revise the Task Order, as applicable.

(d) Agency may grant a full or partial waiver of the Participation Goals to a bidder, proposer or contractor, as applicable, who demonstrates—before submission of the bid, proposal or Task Order, as applicable—that it has legitimate business reasons for proposing the level of subcontracting in its M/WBE Utilization Plan. In making its determination, Agency shall consider factors that shall include, but not be limited to, whether the bidder, proposer or contractor, as applicable, has the capacity and the bona fide intention to perform the Contract without any subcontracting, or to perform the Contract without awarding the amount of subcontracts represented by the Participation Goals. In making such determination, Agency may consider whether the M/WBE Utilization Plan is consistent with past subcontracting practices of the bidder, proposer or contractor, as applicable, whether the bidder, proposer or contractor, as applicable, has made efforts to form a joint venture with a certified firm, and whether the bidder, proposer, or contractor, as applicable, has made good faith efforts to identify other portions of the Contract that it intends to subcontract.

11. **Modification of M/WBE Utilization Plan.** (a) A Contractor may request a modification of its M/WBE Utilization Plan after award of this Contract. **PLEASE NOTE:** If this Contract is a public works project subject to GML §101(5) (i.e., a contract valued at or below \$3M for projects in New York City) or if the Contract is subject to a project labor agreement in accordance with Labor Law §222, and the bidder is required to identify at the time of bid submission its intended subcontractors for the Wicks trades (plumbing and gas fitting; steam heating, hot water heating, ventilating and air conditioning (HVAC); and electric wiring), the Contractor may request a Modification of its M/WBE Utilization Plan as part of its bid submission. The Agency may grant a request for Modification of a Contractor's M/WBE Utilization Plan if it determines that the Contractor has established, with appropriate documentary and other evidence, that it made reasonable, good faith efforts to meet the Participation Goals. In making such determination, Agency shall consider evidence of the following efforts, as applicable, along with any other relevant factors:

- (i) The Contractor advertised opportunities to participate in the Contract, where appropriate, in general circulation media, trade and professional association publications and small business media, and publications of minority and women's business organizations;
- (ii) The Contractor provided notice of specific opportunities to participate in the Contract, in a timely manner, to minority and women's business organizations;
- (iii) The Contractor sent written notices, by certified mail or facsimile, in a timely manner, to advise MBEs or WBEs that their interest in the Contract was solicited;
- (iv) The Contractor made efforts to identify portions of the work that could be substituted for portions originally designated for participation by MBEs and/or WBEs in the M/WBE Utilization Plan, and for which the Contractor claims an inability to retain MBEs or WBEs;
- (v) The Contractor held meetings with MBEs and/or WBEs prior to the date their bids or proposals were due, for the purpose of explaining in detail the scope and requirements of the work for which their bids or proposals were solicited;
- (vi) The Contractor made efforts to negotiate with MBEs and/or WBEs as relevant to perform specific subcontracts, or act as suppliers or service providers;
- (vii) Timely written requests for assistance made by the Contractor to Agency's M/WBE liaison officer and to DSBS;

(viii) Description of how recommendations made by DSBS and Agency were acted upon and an explanation of why action upon such recommendations did not lead to the desired level of participation of MBEs and/or WBEs.

Agency's M/WBE officer shall provide written notice to the Contractor of the determination.

(b) The Agency may modify the Participation Goals when the scope of the work has been changed by the Agency in a manner that affects the scale and types of work that the Contractor indicated in its M/WBE Utilization Plan would be awarded to subcontractors.

12. If this Contract is for an indefinite quantity of construction, standard or professional services or is a requirements type contract and the Contractor has submitted an M/WBE Utilization Plan and has committed to subcontract work to MBEs and/or WBEs in order to meet the Participation Goals, the Contractor will not be deemed in violation of the M/WBE Program requirements for this Contract with regard to any work which was intended to be subcontracted to an MBE and/or WBE to the extent that the Agency has determined that such work is not needed.

13. If Participation Goals have been established for this Contract or a Task Order issued pursuant to this Contract, at least once annually during the term of the Contract or Task Order, as applicable, Agency shall review the Contractor's progress toward attainment of its M/WBE Utilization Plan, including but not limited to, by reviewing the percentage of work the Contractor has actually awarded to MBE and/or WBE subcontractors and the payments the Contractor made to such subcontractors.

14. If Participation Goals have been established for this Contract or a Task Order issued pursuant to this Contract, Agency shall evaluate and assess the Contractor's performance in meeting those goals, and such evaluation and assessment shall become part of the Contractor's overall contract performance evaluation.

PART B: MISCELLANEOUS

1. The Contractor shall take notice that, if this solicitation requires the establishment of an M/WBE Utilization Plan, the resulting contract may be audited by DSBS to determine compliance with Section 6-129. See §6-129(e)(10). Furthermore, such resulting contract may also be examined by the City's Comptroller to assess compliance with the M/WBE Utilization Plan.

2. Pursuant to DSBS rules, construction contracts that include a requirement for an M/WBE Utilization Plan shall not be subject to the law governing Locally Based Enterprises set forth in Section 6-108.1 of the Administrative Code of the City of New York.

3. DSBS is available to assist contractors and potential contractors in determining the availability of MBEs and/or WBEs to participate as subcontractors, and in identifying opportunities that are appropriate for participation by MBEs and/or WBEs in contracts.

4. Prospective contractors are encouraged to enter into qualified joint venture agreements with MBEs and/or WBEs as defined by Section 6-129(c)(30).

5. By submitting a bid or proposal the Contractor hereby acknowledges its understanding of the M/WBE Program requirements set forth herein and the pertinent provisions of Section 6-129, and any rules promulgated thereunder, and if awarded this Contract, the Contractor hereby agrees to comply with the M/WBE Program requirements of this Contract and pertinent provisions of Section 6-129, and any rules promulgated thereunder, all of which shall be deemed to be material terms of this Contract. The Contractor hereby agrees to make all reasonable, good faith efforts to solicit and obtain the participation of MBEs and/or WBEs to meet the required Participation Goals.

ARTICLE II. ENFORCEMENT

1. If Agency determines that a bidder or proposer, as applicable, has, in relation to this procurement, violated Section 6-129 or the DSBS rules promulgated pursuant to Section 6-129, Agency may disqualify such bidder or proposer, as applicable, from competing for this Contract and the Agency may revoke such bidder's or proposer's prequalification status, if applicable.

2. Whenever Agency believes that the Contractor or a subcontractor is not in compliance with Section 6-129 or the DSBS rules promulgated pursuant to Section 6-129, or any provision of this Contract that implements Section 6-129, including, but not limited to any M/WBE Utilization Plan, Agency shall send a written notice to the Contractor describing the alleged noncompliance and offering the Contractor an opportunity to be heard. Agency shall then conduct an investigation to determine whether such Contractor or subcontractor is in compliance.

3. In the event that the Contractor has been found to have violated Section 6-129, the DSBS rules promulgated pursuant to Section 6-129, or any provision of this Contract that implements Section 6-129, including, but not limited to, any M/WBE Utilization Plan, Agency may determine that one of the following actions should be taken:

- (a) entering into an agreement with the Contractor allowing the Contractor to cure the violation;
- (b) revoking the Contractor's pre-qualification to bid or make proposals for future contracts;
- (c) making a finding that the Contractor is in default of the Contract;
- (d) terminating the Contract;
- (e) declaring the Contractor to be in breach of Contract;
- (f) withholding payment or reimbursement;
- (g) determining not to renew the Contract;
- (h) assessing actual and consequential damages;
- (i) assessing liquidated damages or reducing fees, provided that liquidated damages may be based on amounts representing costs of delays in carrying out the purposes of the M/WBE Program, or in meeting the purposes of the Contract, the costs of meeting utilization goals through additional procurements, the administrative costs of investigation and enforcement, or other factors set forth in the Contract;
- (j) exercising rights under the Contract to procure goods, services or construction from another contractor and charge the cost of such contract to the Contractor that has been found to be in noncompliance; or
- (k) taking any other appropriate remedy.

4. If an M/WBE Utilization Plan has been submitted, and pursuant to this Article II, Section 3, the Contractor has been found to have failed to fulfill its Participation Goals contained in its M/WBE Utilization Plan or the Participation Goals as modified by Agency pursuant to Article I, Part A, Section 11, Agency may assess liquidated damages in the amount of ten percent (10%) of the difference between the dollar amount of work required to be awarded to MBE and/or WBE firms to meet the Participation Goals and the dollar amount the Contractor actually awarded and paid, and/or credited, to MBE and/or WBE firms. In view of the difficulty of accurately ascertaining the loss which the City will suffer by reason of Contractor's failure to meet the Participation Goals, the foregoing amount is hereby fixed and agreed as the liquidated damages that the City will suffer by reason of such failure, and not as a penalty. Agency may deduct and retain out of any monies which may become due under this Contract the amount of any such liquidated damages; and in case the amount which may become due under this Contract shall be less than the amount of liquidated damages suffered by the City, the Contractor shall be liable to pay the difference.

5. Whenever Agency has reason to believe that an MBE and/or WBE is not qualified for certification, or is participating in a contract in a manner that does not serve a commercially useful function (as defined in Section 6-129(c)(8)), or has violated any provision of Section 6-129, Agency shall notify the Commissioner of DSBS who shall determine whether the certification of such business enterprise should be revoked.

6. Statements made in any instrument submitted to Agency pursuant to Section 6-129 shall be submitted under penalty of perjury and any false or misleading statement or omission shall be grounds for the application of any applicable criminal and/or civil penalties for perjury. The making of a false or fraudulent statement by an MBE and/or WBE in any instrument submitted pursuant to Section 6-129 shall, in addition, be grounds for revocation of its certification.

7. The Contractor's record in implementing its M/WBE Utilization Plan shall be a factor in the evaluation of its performance. Whenever Agency determines that a Contractor's compliance with an M/WBE Utilization Plan has been unsatisfactory, Agency shall, after consultation with the City Chief Procurement Officer, file an advice of caution form for inclusion in VENDEX as caution data.

IN WITNESS WHEREOF, the Commissioner, on behalf of the City of New York, and the Contractor, have executed this agreement in quadruplicate, two parts of which are to remain with the Commissioner, another to be filed with the Comptroller of the City, and the fourth to be delivered to the Contractor.

THE CITY OF NEW YORK

By: [Signature]
Associate Commissioner

CONTRACTOR: A. Alcom Construction Inc

By: [Signature]
(Member of Firm or Officer of Corporation)

Title: President

(Where Contractor is a Corporation, add):
Attest:

Secretary

(Seal)

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of New York County of Queens ss:

On this 30 day of June 2016, before me personally came MELVIN FRANK to me known, who being by me duly sworn did depose and say that he resides at 134-23 81ST AVE ROSELAND NY 11422 that he is the PRESIDENT of the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.

VICTORIA AYO-VAUGHAN
Notary Public, State of New York
Registration #01AY5014042
Qualified in Queens County
Commission Expires July 15, 2019
Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

State of _____ County of _____ ss:

On this _____ day of _____, before me personally appeared _____ to me known, and known to me to be one of the members of the firm of _____ described in and who executed the foregoing instrument; and he acknowledged to me that he executed the same as and for the act and deed of said firm.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____ County of _____ ss:

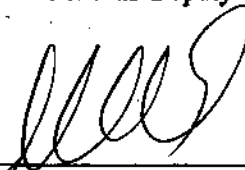
On this _____ day of _____, before me personally appeared _____ to me known, and known to me to be the person described in and who executed the foregoing instrument; and acknowledged that he executed the same.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT BY COMMISSIONER

State of New York County of Queens ss:

On this 30th day of July 2016 before me personally came Christine Flaherty to me known, and known to be the Deputy Commissioner of the Department of Design and Construction of The City of New York, the person described as such in and who as such executed the foregoing instrument and he acknowledged to me that he executed the same as Deputy Commissioner for the purposes therein mentioned.



Notary Public or Commissioner of Deeds

VICTORIA AYO-VAUGHAN
Notary Public, State of New York
Registration #01AY5014042
Qualified in Queens County
Commission Expires July 15, 2019

AUTHORITY

MAYOR'S CERTIFICATE NO. CBX
BUDGET DIRECTOR'S CERTIFICATE NO.

DATED
DATED

APPROPRIATION
COMMISSIONER'S CERTIFICATE

In conformity with the provisions of Section 6-101 of the Administrative Code of the City of New York, it is hereby certified that the estimated cost of the work, materials and supplies required by the within Contract, amounting to

Two million Nine Hundred Forty
Nine Thousand Nine Hundred sixty Four

Dollars (\$ 2,949,964.00)

is chargeable to the fund of the Department of Design and Construction entitled Code

Department of Design and Construction

I hereby certify that the specifications contained herein comply with the terms and conditions of the BUDGET.


Associate Commissioner

COMPTROLLER'S CERTIFICATE

The City of New York _____

Pursuant to the provisions of Section 6-101 of the Administrative Code of the City of New York, I hereby certify that there remains unapplied and unexpended a balance of the above mentioned fund applicable to this Contract sufficient to pay the estimated expense of executing the same viz:

\$ _____

Comptroller

**MAYOR'S CERTIFICATE OR
CERTIFICATE OF THE DIRECTOR
OF THE BUDGET**

Performance Bond #1 (Pages 90 to 93): Use if the total contract price is \$5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

PERFORMANCE BOND #1 (Page 1)

PERFORMANCE BOND #1

KNOW ALL PERSONS BY THESE PRESENTS, That we, _____

hereinafter referred to as the "Principal", and _____

hereinafter referred to as the "Surety" ("Sureties") are held and firmly bound to THE CITY OF NEW YORK, hereinafter referred to as the "City" or to its successors and assigns, in the penal sum of

(\$ _____) Dollars, lawful money of the United States, for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal is about to enter, or has entered, into a Contract in writing with the City for

a copy of which Contract is annexed to and hereby made a part of this bond as though herein set forth in full;

Performance Bond #1 (Pages 90 to 93): Use if the total contract price is \$5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

Bond No. RNS0130446

PERFORMANCE BOND #1 (Page 1)

PERFORMANCE BOND #1

KNOW ALL PERSONS BY THESE PRESENTS, That we, A. Aleem Construction Co., Inc.
1629 Park Avenue, Suite 1N, New York, NY 10029

hereinafter referred to as the "Principal", and RLI Insurance Company
9025 N. Lindbergh Drive, Peoria, IL 61615

hereinafter referred to as the "Surety" ("Sureties") are held and firmly bound to THE CITY OF NEW YORK, hereinafter referred to as the "City" or to its successors and assigns, in the penal sum of

Two Million Nine Hundred Forty Nine Thousand Nine Hundred Sixty Four and 00/100 Dollars

(\$ 2,949,964.00) Dollars, lawful money of the United States, for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal is about to enter, or has entered, into a Contract in writing with the City for

FMS ID: PV181HSA2 / E-PIN: 85015B0170001 / DDC PIN: 8502015PV0018C

Harlem School of The Arts, Phase II - Building Renovations

Borough of Manhattan, NY

a copy of which Contract is annexed to and hereby made a part of this bond as though herein set forth in full;

Performance Bond #1 (Pages 90 to 93): Use if the total contract price is \$5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

PERFORMANCE BOND #1 (Page 2)

NOW, THEREFORE, the conditions of this obligation are such that if the Principal, his or its representatives or assigns, shall well and faithfully perform the said Contract and all modifications, amendments, additions and alterations thereto that may hereafter be made, according to its terms and its true intent and meaning, including repair and or replacement of defective work and guarantees of maintenance for the periods stated in the Contract, and shall fully indemnify and save harmless the City from all cost and damage which it may suffer by reason of the Principal's default of the Contract, and shall fully reimburse and repay the City for all outlay and expense which the City may incur in making good any such default and shall protect the said City of New York against, and pay any and all amounts, damages, cost and judgments which may or shall be recovered against said City or its officers or agents or which the said City of New York may be called upon to pay any person or corporation by reason of any damages arising or growing out of the Principal's default of the Contract, then this obligation shall be null and void, otherwise to remain in full force and effect.

The Surety (Sureties), for value received, hereby stipulates and agrees, upon written notice from the City that the City has determined that the Principal is in default of the Contract, to (1) pay the City the cost to complete the contract as determined by the City in excess of the balance of the Contract held by the City, plus any damages or costs to which the City is entitled, up to the full amount of the above penal sum, (2) fully perform and complete the Work to be performed under the Contract, pursuant to the terms, conditions, and covenants thereof, or (3) tender a completion Contractor that is acceptable to the City. The Surety (Sureties) further agrees, at its option, either to notify the City that it elects to pay the city the cost of completion plus any applicable damages and costs under option (1) above, or to commence and diligently perform the Work specified in the Contract, including physical site work, within twenty-five (25) business days after written notice thereof from the City and, if the Surety elects to fully perform and complete the Work, then to complete all Work within the time set forth in the Contract or such other time as agreed to between the City and Surety in accordance with the Contract. If the Surety elects to tender payment pursuant to (1) above, then the Surety shall tender such amount within fifteen (15) business days notification from the City of the cost of completion. The Surety and the City reserve all rights and defenses each may have against the other; provided, however, that the Surety expressly agrees that its reservation of rights shall not provide a basis for non-performance of its obligation to pay the City the cost of completion, to commence and complete all Work as provided herein, or to tender a completion contractor.

The Surety (Sureties), for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety (Sureties) and its bond shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or to the said Contract or the Work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or any moneys due or to become due thereunder; and said Surety (Sureties) does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, and waivers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to subcontractors shall have the same effect as to said Surety (Sureties) as though done or omitted to be done by or in relation to said Principal. Notwithstanding the above, if the City makes payments to the Principal before the time required by the contract that in the aggregate exceed \$100,000 or 10% of the Contract price, whichever is less, and that have not become earned prior to the Principal being found to be in default, then all payments made to the Principal before the time required by the Contract shall be added to the remaining contract value available to be paid for the completion of the Contract as if such sums had not been paid to the Principal, but shall not provide a basis for non-performance of its obligation to pay the City the cost of completion, to commence and to complete all Work as provided herein, or to tender a completion contractor.

Performance Bond #1 (Pages 90 to 93): Use if the total contract price is \$5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

PERFORMANCE BOND #1 (Page 3)

IN WITNESS WHEREOF, the Principal and the Surety (Sureties) have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereunto affixed and these presents to be signed by their proper officers, this 29th day of June, 2016.

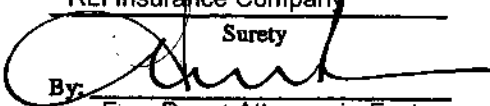
(Seal)

A. Aleem Construction Co., Inc. (L.S.)
Principal

By: _____

(Seal)

RLI Insurance Company
Surety

By: 
Fern Perry, Attorney-in-Fact

(Seal)

Surety

By: _____

(Seal)

Surety

By: _____

Bond Premium Rate _____

Bond Premium Cost _____

If the Contractor (Principal) is a partnership, the bond should be signed by each of the individuals who are partners.

If the Contractor (Principal) is a corporation, the bond should be signed in its correct corporate name by a duly authorized officer, agent, or attorney-in-fact.

There should be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts of the Contract.

Performance Bond #1 (Pages 90 to 93): Use if the total contract price is \$5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

PERFORMANCE BOND #1 (Page 4)

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of New York County of _____ ss:

On this _____ day of _____, _____, before me personally came _____ to me known, who, being by me duly sworn did depose and say that he resides at _____ that he is the _____ of the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

State of _____ County of _____ ss:

On this _____ day of _____, _____ before me personally appeared _____ to me known, and known to me to be one of the members of the firm of _____ described in and who executed the foregoing instrument; and he acknowledged to me that he executed the same as and for the act and deed of said firm.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____ County of _____ ss:

On this _____ day of _____, _____ before me personally appeared _____ to me known, and known to me to be the person described in and who executed the foregoing instrument; and acknowledged that he executed the same.

Notary Public or Commissioner of Deeds

Each executed bond should be accompanied by: (a) appropriate acknowledgments of the respective parties; (b) appropriate duly certified copy of Power of Attorney or other certificate of authority where bond is executed by agent, officer or other representative of Principal or Surety; (c) a duly certified extract from By-Laws or resolutions of Surety under which Power of Attorney or other certificate of authority of its agent, officer or representative was issued, and (d) certified copy of latest published financial statement of assets and liabilities of Surety.

* * * * *

Affix Acknowledgments and Justification of Sureties

ACKNOWLEDGMENT OF SURETY

STATE OF NEW YORK }
COUNTY OF NASSAU } ^{ss:}

On June 29, 2016 before me personally came Fern Perry to me known who, being by me duly sworn, did depose and say that he/she resides at 255 Executive Drive, Plainview, New York 11803, that he/she is the Attorney-In-Fact of RLI Insurance Company the corporation described in and which executed the foregoing instrument; and that he/she signed his/her name thereto by order of the Board of Directors of said corporation.



Notary Public
Peter Henry
Notary Public State of NY
No. 01HE4784829
Qualified in Nassau County
Commission Expires January 31, 2018

POWER OF ATTORNEY
RLI Insurance Company
Contractors Bonding and Insurance Company

Know All Men by These Presents:

That this Power of Attorney is not valid or in effect unless attached to the bond which it authorizes executed, but may be detached by the approving officer if desired.

That this Power of Attorney may be effective and given to either or both of **RLI Insurance Company** and **Contractors Bonding and Insurance Company**, required for the applicable bond.

That **RLI Insurance Company** and/or **Contractors Bonding and Insurance Company**, each Illinois corporations (as applicable), each authorized and licensed to do business in all states and the District of Columbia do hereby make, constitute and appoint:

Peter Henry, Robert Finnell, Fern Perry, Rosanne Callahan, jointly or severally

in the City of Plainview, State of New York, as Attorney in Fact, with full power and authority hereby conferred upon him/her to sign, execute, acknowledge and deliver for and on its behalf as Surety, in general, any and all bonds, undertakings, and recognizances in an amount not to exceed Ten Million Dollars (\$10,000,000.00) for any single obligation.

The acknowledgment and execution of such bond by the said Attorney in Fact shall be as binding upon this Company as if such bond had been executed and acknowledged by the regularly elected officers of this Company.

RLI Insurance Company and **Contractors Bonding and Insurance Company**, as applicable, have each further certified that the following is a true and exact copy of the Resolution adopted by the Board of Directors of each such corporation, and now in force, to-wit:

"All bonds, policies, undertakings, Powers of Attorney or other obligations of the Corporation shall be executed in the corporate name of the Corporation by the President, Secretary, any Assistant Secretary, Treasurer, or any Vice President, or by such other officers as the Board of Directors may authorize. The President, any Vice President, Secretary, any Assistant Secretary, or the Treasurer may appoint Attorneys in Fact or Agents who shall have authority to issue bonds, policies or undertakings in the name of the Corporation. The corporate seal is not necessary for the validity of any bonds, policies, undertakings, Powers of Attorney or other obligations of the Corporation. The signature of any such officer and the corporate seal may be printed by facsimile or other electronic image."

IN WITNESS WHEREOF, **RLI Insurance Company** and/or **Contractors Bonding and Insurance Company**, as applicable, have caused these presents to be executed by its respective Vice President with its corporate seal affixed this 20th day of February, 2015.

State of Illinois }
County of Peoria } SS



RLI Insurance Company
Contractors Bonding and Insurance Company

Roy C. Die Vice President

CERTIFICATE

I, the undersigned officer of **RLI Insurance Company**, and/or **Contractors Bonding and Insurance Company**, each Illinois corporations, do hereby certify that the attached Power of Attorney is in full force and effect and is irrevocable; and furthermore, that the Resolution of the Company as set forth in the Power of Attorney, is now in force. In testimony whereof, I have hereunto set my hand and the seal of the **RLI Insurance Company** and/or **Contractors Bonding and Insurance Company** this ___ day of _____.

JUN 29 2016

RLI Insurance Company
Contractors Bonding and Insurance Company

Roy C. Die Vice President

Jacqueline M. Bockler
Jacqueline M. Bockler Notary Public





RLI Insurance Company
 P.O. Box 3967 Peoria IL 61612-3967
 Phone: 309-692-1000 Fax: 309-683-1610

RLI Insurance Company

December 31, 2015

Admitted Assets

Investments:	
Fixed maturities	\$ 649,350,928
Equity securities	886,479,641
Short-term investments	3,616,870
Real estate	25,589,667
Properties held to produce income	0
Cash on hand and on deposit	14,281,348
Other invested assets	19,263,858
Receivables for securities	925,099
Agents' balances	75,730,616
Investment income due and accrued	6,471,239
Funds held	4,000
Reinsurance recoverable on paid losses	22,790,869
Federal income taxes receivable	243,641
Net deferred tax asset	0
Guarantee funds receivable or on deposit	55,809
Electronic data processing equipment, net of depreciation	733,924
Receivable from affiliates	12,292,822
Other admitted assets	7,263,351
Total Admitted Assets	\$ 1,725,093,482

Liabilities and Surplus

Liabilities:	
Reserve for unpaid losses and loss adjustment expenses	\$ 467,302,987
Unearned premiums	232,132,017
Accrued expenses	61,363,378
Funds held	675,513
Advance premiums	5,797,135
Amounts withheld	60,525,980
Dividends declared and unpaid	23,945
Ceded reinsurance premium payable	24,419,854
Payable for securities	1,992,972
Statutory penalties	212,600
Current federal & foreign income taxes	0
Federal income tax payable	4,647,648
Borrowed money and accrued interest	0
Drafts outstanding	0
Payable to affiliate	24,369
Other liabilities	706,686
Total Liabilities	\$ 859,825,084
Surplus:	
Common stock	\$ 10,000,375
Additional paid-in capital	242,451,084
Unassigned surplus	612,816,939
Total Surplus	\$ 865,268,398
Total Liabilities and Surplus	\$ 1,725,093,482

State of Illinois }
 County of Peoria }

The undersigned, being duly sworn, says: That he is the President of **RLI Insurance Company**; that said Company is a corporation duly organized, in the State of Illinois, and licensed and engaged in business in the State of _____ and has duly complied with all the requirements of the laws of said State applicable of said Company and is duly qualified to act as Surety under such laws; that said Company has also complied with and is duly qualified to act as Surety under the Act of Congress approved July 1947, 6U.S.C sec. 6-13; and that to the best of his knowledge and belief the above statement is a full, true, and correct statement of the financial condition of the said Company on the 31st day of December 2015.

Attest:



{ Corporate Seal Affixed }

Craig Kliethermes President

 Cherie L. Montgomery Assistant Secretary

Sworn to before me this 9th day of March, 2016.



{ Notarial Seal Affixed }

Jacqueline M. Bockler Notary Public, State of Illinois

Payment Bond (Pages 98 to 101): Use for any contract for which a Payment Bond is required.

Bond No. RNS0130446

PAYMENT BOND

PAYMENT BOND (Page 1)

KNOW ALL PERSONS BY THESE PRESENTS, That we, A. Aleem Construction Co., Inc.
1629 Park Avenue, Suite 1N, New York, NY 10029

hereinafter referred to as the "Principal", and RLI Insurance Company

9025 N. Lindbergh Drive, Peoria, IL 61615

hereinafter referred to as the "Surety" ("Sureties") are held and firmly bound to **THE CITY OF NEW YORK**, hereinafter referred to as the "City" or to its successors and assigns, in the penal sum of

Two Million Nine Hundred Forty Nine Thousand Nine Hundred Sixty Four and 00/100 Dollars

(\$2,949,964.00) Dollars, lawful money of the United States, for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal is about to enter, or has entered, into a Contract in writing with the City for

FMS ID: PV181HSA2 / E-PIN: 85015B0170001 / DDC PIN: 8502015PV0018C

Harlem School of The Arts, Phase II - Building Renovations

Borough of Manhattan, NY

a copy of which Contract is annexed to and hereby made a part of this bond as though herein set forth in full;

NOW, THEREFORE, the conditions of this obligation are such that if the Principal, his or its representatives or assigns and other Subcontractors to whom Work under this Contract is sublet and his or their successors and assigns shall promptly pay or cause to be paid all lawful claims for

(a) Wages and compensation for labor performed and services rendered by all persons engaged in the prosecution of the Work under said Contract, and any amendment or extension thereof or addition thereto, whether such persons be agents servants or employees of the Principal or any such Subcontractor, including all persons so

Payment Bond (Pages 98 to 101): Use for any contract for which a Payment Bond is required.

PAYMENT BOND (Page 2)

engaged who perform the work of laborers or mechanics at or in the vicinity of the site of the Project regardless of any contractual relationship between the Principal or such Subcontractors, or his or their successors or assigns, on the one hand and such laborers or mechanics on the other, but not including office employees not regularly stationed at the site of the project; and

(b) Materials and supplies (whether incorporated in the permanent structure or not), as well as teams, fuels, oils, implements or machinery furnished, used or consumed by said Principal or any subcontractor at or in the vicinity of the site of the Project in the prosecution of the Work under said Contract and any amendment or extension thereof or addition thereto; then this obligation shall be void, otherwise to remain in full force and effect.

This bond is subject to the following additional conditions, limitations and agreements:

(a) The Principal and Surety (Sureties) agree that this bond shall be for the benefit of any materialmen or laborer having a just claim, as well as the City itself.

(b) All persons who have performed labor, rendered services or furnished materials and supplies, as aforesaid, shall have a direct right of action against the Principal and his, its or their successors and assigns, and the Surety (Sureties) herein, or against either or both or any of them and their successors and assigns. Such persons may sue in their own name, and may prosecute the suit to judgment and execution without the necessity of joining with any other persons as party plaintiff.

(c) The Principal and Surety (Sureties) agree that neither of them will hold the City liable for any judgment for costs of otherwise, obtained by either or both of them against a laborer or materialman in a suit brought by either a laborer or materialman under this bond for moneys allegedly due for performing work or furnishing material.

(d) The Surety (Sureties) or its successors and assigns shall not be liable for any compensation recoverable by an employee or laborer under the Workmen's Compensation Law.

(e) In no event shall the Surety (Sureties), or its successors or assigns, be liable for a greater sum than the penalty of this bond or be subject to any suit, action or proceeding hereon that is instituted by any person, firm, or corporation hereunder later than two years after the complete performance of said Contract and final settlement thereof.

The Principal, for himself and his successors and assigns, and the Surety (Sureties), for itself and its successors and assigns, do hereby expressly waive any objection that might be interposed as to the right of the City to require a bond containing the foregoing provisions, and they do hereby further expressly waive any defense which they or either of them might interpose to an action brought hereon by any person, firm or corporation, including subcontractors, materialmen and third persons, for work, labor, services, supplies or material performed rendered, or furnished as aforesaid upon the ground that there is no law authorizing the City to require the foregoing provisions to be placed in this bond.

And the Surety (Sureties), for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety (Sureties), and its bonds shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or of the said Contract or the work to be performed thereunder; or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any part thereof, or of any Work to be performed, or any moneys due to become due thereunder and said Surety (Sureties) does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, Subcontractors, and other transferees shall have the same effect as to said Surety (Sureties) as though done or omitted to be done or in relation to said Principal.

Payment Bond (Pages 98 to 101): Use for any contract for which a Payment Bond is required.


PAYMENT BOND (Page 3)

IN WITNESS HEREOF, the Principal and the Surety (Sureties) have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereunto affixed and these presents to be signed by their proper officers, this 29th day of June, 2016.

(Seal) A. Aleem Construction Co., Inc. (L.S.)
Principal

By: _____

(Seal) RLI Insurance Company
Surety

By: 
Fern Perry, Attorney-in-Fact

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

If the Contractor (Principal) is a partnership, the bond should be signed by each of the individuals who are partners.

If the Contractor (Principal) is a corporation, the bond should be signed in its correct corporate name by a duly authorized officer, agent, or attorney-in-fact.

There should be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts of the Contract.

Payment Bond (Pages 98 to 101): Use for any contract for which a Payment Bond is required.

PAYMENT BOND (Page 4)

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of _____ County of _____ ss:

On this _____ day of _____ before me personally came to me known, who, being by me duly sworn did depose and say that he resides at _____ that he is the _____ of the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

State of _____ County of _____ ss:

On this _____ day of _____ before me personally appeared to me known, and known to me to be one of the members of the firm of _____ described in and who executed the foregoing instrument; and he acknowledged to me that he executed the same as and for the act and deed of said firm.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____ County of _____ ss:

On this _____ day of _____ before me personally appeared to me known, and known to me to be the person described in and who executed the foregoing instrument; and acknowledged that he executed the same.

Notary Public or Commissioner of Deeds

Each executed bond should be accompanied by: (a) appropriate acknowledgments of the respective parties; (b) appropriate duly certified copy of Power of Attorney or other certificate of authority where bond is executed by agent, officer or other representative of Principal or Surety; (c) a duly certified extract from By-Laws or resolutions of Surety under which Power of Attorney or other certificate of authority of its agent, officer or representative was issued, and (d) certified copy of latest published financial statement of assets and liabilities of Surety.

Affix Acknowledgments and Justification of Sureties

ACKNOWLEDGMENT OF SURETY

STATE OF NEW YORK }
COUNTY OF NASSAU } ^{ss:}

On June 29, 2016 before me personally came Fern Perry to me known who, being by me duly sworn, did depose and say that he/she resides at 255 Executive Drive, Plainview, New York 11803, that he/she is the Attorney-In-Fact of RLI Insurance Company the corporation described in and which executed the foregoing instrument; and that he/she signed his/her name thereto by order of the Board of Directors of said corporation.



Notary Public
Peter Henry
Notary Public State of NY
No. 01HE4784829
Qualified in Nassau County
Commission Expires January 31, 2018

POWER OF ATTORNEY
RLI Insurance Company
Contractors Bonding and Insurance Company

Know All Men by These Presents:

That this Power of Attorney is not valid or in effect unless attached to the bond which it authorizes executed, but may be detached by the approving officer if desired.

That this Power of Attorney may be effective and given to either or both of **RLI Insurance Company** and **Contractors Bonding and Insurance Company**, required for the applicable bond.

That **RLI Insurance Company** and/or **Contractors Bonding and Insurance Company**, each Illinois corporations (as applicable), each authorized and licensed to do business in all states and the District of Columbia do hereby make, constitute and appoint:

Peter Henry, Robert Finnell, Fern Perry, Rosanne Callahan, jointly or severally

in the City of Plainview, State of New York, as Attorney in Fact, with full power and authority hereby conferred upon him/her to sign, execute, acknowledge and deliver for and on its behalf as Surety, in general, any and all bonds, undertakings, and recognizances in an amount not to exceed Ten Million Dollars (\$10,000,000.00) for any single obligation.

The acknowledgment and execution of such bond by the said Attorney in Fact shall be as binding upon this Company as if such bond had been executed and acknowledged by the regularly elected officers of this Company.

RLI Insurance Company and **Contractors Bonding and Insurance Company**, as applicable, have each further certified that the following is a true and exact copy of the Resolution adopted by the Board of Directors of each such corporation, and now in force, to-wit:

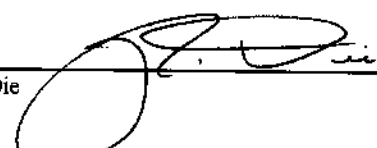
"All bonds, policies, undertakings, Powers of Attorney or other obligations of the Corporation shall be executed in the corporate name of the Corporation by the President, Secretary, any Assistant Secretary, Treasurer, or any Vice President, or by such other officers as the Board of Directors may authorize. The President, any Vice President, Secretary, any Assistant Secretary, or the Treasurer may appoint Attorneys in Fact or Agents who shall have authority to issue bonds, policies or undertakings in the name of the Corporation. The corporate seal is not necessary for the validity of any bonds, policies, undertakings, Powers of Attorney or other obligations of the Corporation. The signature of any such officer and the corporate seal may be printed by facsimile or other electronic image."

IN WITNESS WHEREOF, **RLI Insurance Company** and/or **Contractors Bonding and Insurance Company**, as applicable, have caused these presents to be executed by its respective Vice President with its corporate seal affixed this 20th day of February, 2015.

State of Illinois }
County of Peoria } SS



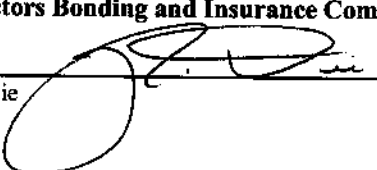
RLI Insurance Company
Contractors Bonding and Insurance Company

Roy C. Die  Vice President

CERTIFICATE

I, the undersigned officer of **RLI Insurance Company**, and/or **Contractors Bonding and Insurance Company**, each Illinois corporations, do hereby certify that the attached Power of Attorney is in full force and effect and is irrevocable; and furthermore, that the Resolution of the Company as set forth in the Power of Attorney, is now in force. In testimony whereof, I have hereunto set my hand and the seal of the **RLI Insurance Company** and/or **Contractors Bonding and Insurance Company** this _____ day of _____,

JUN 29 2016
RLI Insurance Company
Contractors Bonding and Insurance Company

Roy C. Die  Vice President

Jacqueline M. Bockler
Notary Public





RLI Insurance Company
P.O. Box 3967 Peoria IL 61612-3967
Phone: 309-692-1000 Fax: 309-683-1610

RLI Insurance Company

December 31, 2015

Admitted Assets

Investments:	
Fixed maturities	\$ 649,350,928
Equity securities	886,479,641
Short-term investments	3,616,870
Real estate	25,589,667
Properties held to produce income	0
Cash on hand and on deposit	14,281,348
Other invested assets	19,263,658
Receivables for securities	925,099
Agents' balances	75,730,616
Investment income due and accrued	6,471,239
Funds held	4,000
Reinsurance recoverable on paid losses	22,790,869
Federal income taxes receivable	243,641
Net deferred tax asset	0
Guarantee funds receivable or on deposit	55,809
Electronic data processing equipment, net of depreciation	733,924
Receivable from affiliates	12,292,822
Other admitted assets	7,263,351
Total Admitted Assets	\$ 1,725,093,482

State of Illinois }
County of Peoria }

Liabilities and Surplus

Liabilities:	
Reserve for unpaid losses and loss adjustment expenses	\$ 467,302,987
Unearned premiums	232,132,017
Accrued expenses	61,363,378
Funds held	675,513
Advance premiums	5,797,135
Amounts withheld	60,525,980
Dividends declared and unpaid	23,945
Ceded reinsurance premium payable	24,419,854
Payable for securities	1,992,972
Statutory penalties	212,600
Current federal & foreign income taxes	0
Federal income tax payable	4,647,648
Borrowed money and accrued interest	0
Drafts outstanding	0
Payable to affiliate	24,369
Other liabilities	706,686
Total Liabilities	\$ 859,825,084
Surplus:	
Common stock	\$ 10,000,375
Additional paid-in capital	242,451,084
Unassigned surplus	612,816,939
Total Surplus	\$ 865,268,398
Total Liabilities and Surplus	\$ 1,725,093,482

The undersigned, being duly sworn, says: That he is the President of **RLI Insurance Company**; that said Company is a corporation duly organized, in the State of Illinois, and licensed and engaged in business in the State of _____ and has duly complied with all the requirements of the laws of said State applicable of said Company and is duly qualified to act as Surety under such laws; that said Company has also complied with and is duly qualified to act as Surety under the Act of Congress approved July 1947, 6U.S.C sec. 6-13; and that to the best of his knowledge and belief the above statement is a full, true, and correct statement of the financial condition of the said Company on the 31st day of December 2015.

Attest:



{ Corporate Seal Affixed }

Craig Kliethermes President

Cherie L. Montgomery Assistant Secretary

Sworn to before me this 9th day of March, 2016.



{ Notarial Seal Affixed }

Jacqueline M. Bockler Notary Public, State of Illinois



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
06/28/2016

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER The Carmoon Group, Ltd. 240 Fulton Avenue Hempstead NY 11550	CONTACT NAME: Bryant Arthur PHONE (A/C, No. Ext): (516) 292-3780 E-MAIL ADDRESS: barthur@carmoongroup.com	FAX (A/C, No): (516) 292-3780
	INSURER(S) AFFORDING COVERAGE	
INSURED A. Aleem Construction Inc. 1629 Park Avenue Suite 1B New York NY 10029	INSURER A: Colony Specialty Insurance Co.	NAIC # 36927
	INSURER B: Hudson Excess Insurance Co.	NAIC # 14484
	INSURER C: New York State Insurance Fund	NAIC # 524210
	INSURER D: Standard Security Insurance	
	INSURER E: INSURER F:	

COVERAGES **CERTIFICATE NUMBER:** Cert ID 550 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> Contractual Liab GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PROJECT <input type="checkbox"/> LOC OTHER:			103 GL 0013857-00A.	04/29/2016	04/29/2017	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 100,000 MED EXP (Any one person) \$ 5,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000
	AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> NON-OWNED AUTOS						COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
B	<input type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED RETENTION \$			4688807	04/29/2016	04/29/2017	EACH OCCURRENCE \$ 5,000,000 AGGREGATE \$ 5,000,000
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A	2370142-8	09/19/2015	09/19/2016	PER STATUTE OTH-ER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
D	Disability			DBL98238	03/30/2016	03/30/2017	\$ Statutory

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
 PROJECT: Harlem School of the Arts, Inc.

City of New York including its officials and employees with coverage at least as broad as ISO forms CG2010 and 2037 and all person or organization if any that Article 22 of the Contract requires to be named as additional insured with coverage at least as broad as ISO Form CG 2026. The additional insured endorsement shall either specify the entity name, if known or the entity title. The Harlem School of Arts, Inc. are listed as the additional insured.

CERTIFICATE HOLDER

ACCO'S OFFICE INSURANCE UNIT
 30-30 THOMSON AVENUE 4TH FLOOR
 LONG ISLAND CITY NY 11101

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE
Lyle Ant

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART III. Broker's Certification

[Pursuant to Article 22.3.3 of the Contract, every Certificate of Insurance must be accompanied by either the following certification by the broker setting forth the following text and required information and signatures or certified copies of all policies referenced in the Certificate of Insurance.]

CERTIFICATION BY BROKER

The undersigned insurance broker represents to the City of New York that the attached Certificate of Insurance is accurate in all material respects, and that the described insurance is effective as of the date of this Certification.

The Carmoon Group Ltd.

[Name of broker (typewritten)]

240 Fulton Avenue Hempstead NY 11550

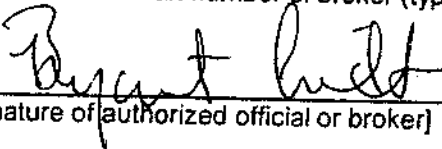
[Address of broker (typewritten)]

BArthur@carmoongroup.com

[Email address of broker (typewritten)]

(516) 292-3780 / (516) 908-7879

[Phone number/Fax number of broker (typewritten)]



[Signature of authorized official or broker]

Bryant Arthur, President

[Name and title of authorized official (typewritten)]

State of NEW YORK)
County of NASSAU) ss:

Sworn to before me this

28th day of JUNE, 2016


NOTARY PUBLIC FOR THE STATE OF NEW YORK

DENNIS A. HENRIQUEZ
Notary Public, State of New York
No. 01HE6160802
Qualified in Nassau & Certified in Queens
Commission Expires February 12, 2019

Performance Bond #1 (Pages 90 to 93): Use if the total contract price is \$5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

PERFORMANCE BOND #1 (Page 2)

NOW, THEREFORE, the conditions of this obligation are such that if the Principal, his or its representatives or assigns, shall well and faithfully perform the said Contract and all modifications, amendments, additions and alterations thereto that may hereafter be made, according to its terms and its true intent and meaning, including repair and or replacement of defective work and guarantees of maintenance for the periods stated in the Contract, and shall fully indemnify and save harmless the City from all cost and damage which it may suffer by reason of the Principal's default of the Contract, and shall fully reimburse and repay the City for all outlay and expense which the City may incur in making good any such default and shall protect the said City of New York against, and pay any and all amounts, damages, cost and judgments which may or shall be recovered against said City or its officers or agents or which the said City of New York may be called upon to pay any person or corporation by reason of any damages arising or growing out of the Principal's default of the Contract, then this obligation shall be null and void, otherwise to remain in full force and effect.

The Surety (Sureties), for value received, hereby stipulates and agrees, upon written notice from the City that the City has determined that the Principal is in default of the Contract, to (1) pay the City the cost to complete the contract as determined by the City in excess of the balance of the Contract held by the City, plus any damages or costs to which the City is entitled, up to the full amount of the above penal sum, (2) fully perform and complete the Work to be performed under the Contract, pursuant to the terms, conditions, and covenants thereof, or (3) tender a completion Contractor that is acceptable to the City. The Surety (Sureties) further agrees, at its option, either to notify the City that it elects to pay the city the cost of completion plus any applicable damages and costs under option (1) above, or to commence and diligently perform the Work specified in the Contract, including physical site work, within twenty-five (25) business days after written notice thereof from the City and, if the Surety elects to fully perform and complete the Work, then to complete all Work within the time set forth in the Contract or such other time as agreed to between the City and Surety in accordance with the Contract. If the Surety elects to tender payment pursuant to (1) above, then the Surety shall tender such amount within fifteen (15) business days notification from the City of the cost of completion. The Surety and the City reserve all rights and defenses each may have against the other; provided, however, that the Surety expressly agrees that its reservation of rights shall not provide a basis for non-performance of its obligation to pay the City the cost of completion, to commence and complete all Work as provided herein, or to tender a completion contractor.

The Surety (Sureties), for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety (Sureties) and its bond shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or to the said Contract or the Work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or any moneys due or to become due thereunder; and said Surety (Sureties) does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, and waivers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to subcontractors shall have the same effect as to said Surety (Sureties) as though done or omitted to be done by or in relation to said Principal. Notwithstanding the above, if the City makes payments to the Principal before the time required by the contract that in the aggregate exceed \$100,000 or 10% of the Contract price, whichever is less, and that have not become earned prior to the Principal being found to be in default, then all payments made to the Principal before the time required by the Contract shall be added to the remaining contract value available to be paid for the completion of the Contract as if such sums had not been paid to the Principal, but shall not provide a basis for non-performance of its obligation to pay the City the cost of completion, to commence and to complete all Work as provided herein, or to tender a completion contractor.

Performance Bond #1 (Pages 90 to 93): Use if the total contract price is \$5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

PERFORMANCE BOND #1 (Page 3)

IN WITNESS WHEREOF, the Principal and the Surety (Sureties) have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereunto affixed and these presents to be signed by their proper officers, this _____ day of _____, _____.

(Seal) _____ (L.S.)
Principal

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

Bond Premium Rate _____

Bond Premium Cost _____

If the Contractor (Principal) is a partnership, the bond should be signed by each of the individuals who are partners.

If the Contractor (Principal) is a corporation, the bond should be signed in its correct corporate name by a duly authorized officer, agent, or attorney-in-fact.

There should be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts of the Contract.

Performance Bond #1 (Pages 90 to 93): Use if the total contract price is \$5 Million Or Less. Performance Bond #1 has been approved by the U.S. Small Business Administration ("SBA") for participation in its Bond Guarantee Program.

PERFORMANCE BOND #1 (Page 4)

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of _____ County of _____ ss:

On this _____ day of _____, _____, before me personally came _____ to me known, who, being by me duly sworn did depose and say that he resides at _____ that he is the _____ of the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

State of _____ County of _____ ss:

On this _____ day of _____, _____ before me personally appeared _____ to me known, and known to me to be one of the members of the firm of _____ described in and who executed the foregoing instrument; and he acknowledged to me that he executed the same as and for the act and deed of said firm.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____ County of _____ ss:

On this _____ day of _____, _____ before me personally appeared _____ to me known, and known to me to be the person described in and who executed the foregoing instrument; and acknowledged that he executed the same.

Notary Public or Commissioner of Deeds

Each executed bond should be accompanied by: (a) appropriate acknowledgments of the respective parties; (b) appropriate duly certified copy of Power of Attorney or other certificate of authority where bond is executed by agent, officer or other representative of Principal or Surety; (c) a duly certified extract from By-Laws or resolutions of Surety under which Power of Attorney or other certificate of authority of its agent, officer or representative was issued, and (d) certified copy of latest published financial statement of assets and liabilities of Surety.

* * * * *

Affix Acknowledgments and Justification of Sureties

Performance Bond #2 (Pages 94 to 97): Use if the total contract price is more than \$5 Million.

PERFORMANCE BOND #2 (Page 1)

PERFORMANCE BOND #2

KNOW ALL PERSONS BY THESE PRESENTS, That we, _____

hereinafter referred to as the "Principal", and _____

hereinafter referred to as the "Surety" ("Sureties") are held and firmly bound to THE CITY OF NEW YORK, hereinafter referred to as the "City" or to its successors and assigns, in the penal sum of

(\$ _____) Dollars, lawful money of the United States, for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal is about to enter, or has entered, into a Contract in writing with the City for

a copy of which Contract is annexed to and hereby made a part of this bond as though herein set forth in full;

NOW, THEREFORE, the conditions of this obligation are such that if the Principal, his or its representatives or assigns, shall well and faithfully perform the said Contract and all modifications, amendments, additions and alterations thereto that may hereafter be made, according to its terms and its true intent and meaning, including repair and or replacement of defective work and guarantees of maintenance for the periods stated in the Contract, and shall fully indemnify and save harmless the City from all cost and damage which it may suffer by reason of the Principal's default of the Contract, and shall fully reimburse and repay the City for all outlay and expense which the City may incur in making good any such default and shall protect the said City of New York against, and pay any and all amounts, damages, cost and judgments which may or shall be recovered against said City or its officers or agents or which the said City of New York may be called upon to pay any person or corporation by reason of any damages arising or growing out of the Principal's default of the Contract, then this obligation shall be null and void, otherwise to remain in full force and effect.

The Surety (Sureties), for value received, hereby stipulates and agrees, upon written notice from the City that the City has determined that the Principal is in default of the Contract, to either (1) pay the full amount of the above penal sum in complete discharge and exoneration of this bond and of all the liabilities of the Surety relating to this bond, or (2) fully perform and complete the Work to be performed under the Contract, pursuant to the terms, conditions, and covenants thereof. The Surety (Sureties) further agrees, at its option, either to tender the penal sum or to commence and diligently perform the Work specified in the Contract, including physical site work, within twenty-five (25) business days after written notice thereof from the City and to complete all Work within the time set forth in the Contract or such other time as agreed to between the City and Surety in accordance with the Contract. The Surety and the City reserve all rights and defenses each may have against the other; provided, however, that the Surety expressly agrees that its reservation of rights shall not provide a basis for non-performance of its obligation to commence and to complete all Work as provided herein.

The Surety (Sureties), for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety (Sureties) and its bond shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or to the said Contract or the Work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any Work to be performed or any moneys due or to become due thereunder; and said Surety (Sureties) does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, subcontractors, and other transferees shall have the same effect as to said Surety (Sureties) as though done or omitted to be done by or in relation to said Principal.

Performance Bond #2 (Pages 94 to 97): Use if the total contract price is more than \$5 Million.

PERFORMANCE BOND #2 (Page 3)

IN WITNESS WHEREOF, the Principal and the Surety (Sureties) have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereunto affixed and these presents to be signed by their proper officers, this _____ day of _____, _____.

(Seal) _____ (L.S.)
Principal

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

Bond Premium Rate _____

Bond Premium Cost _____

If the Contractor (Principal) is a partnership, the bond should be signed by each of the individuals who are partners.

If the Contractor (Principal) is a corporation, the bond should be signed in its correct corporate name by a duly authorized officer, agent, or attorney-in-fact.

There should be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts of the Contract.

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of _____ County of _____ ss:

On this _____ day of _____, 20____ before me personally came _____ to me known, who, being by me duly sworn did depose and say that he/she resides at _____; that he/she is the _____ of _____ the corporation described in and which executed the foregoing instrument; and that he signed his name to the foregoing instrument by order of the directors of said corporation as the duly authorized and binding act thereof.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

State of _____ County of _____ ss:

On this _____ day of _____, 20____ before me personally came _____ to me known, who, being by me duly sworn did depose and say that he/she resides at _____; that he/she is _____ partner of _____, a limited/general partnership existing under the laws of the State of _____ the partnership described in and which executed the foregoing instrument; and that he/she signed his/her name to the foregoing instrument as the duly authorized and binding act of said partnership.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____ County of _____ ss:

On this _____ day of _____, 20____ before me personally came _____ to me known, who, being by me duly sworn did depose and say that he/she resides at _____, and that he/she is the individual whose name is subscribed to the within instrument and acknowledged to me that by his/her signature on the instrument, said individual executed the instrument.

Notary Public or Commissioner of Deeds

Each executed bond should be accompanied by: (a) appropriate acknowledgments of the respective parties; (b) appropriate duly certified copy of Power of Attorney or other certificate of authority where bond is executed by agent, officer or other representative of Principal or Surety; (c) a duly certified extract from By-Laws or resolutions of Surety under which Power of Attorney or other certificate of authority of its agent, officer or representative was issued, and (d) certified copy of latest published financial statement of assets and liabilities of Surety.

Affix Acknowledgments and Justification of Sureties.

Payment Bond (Pages 98 to 101): Use for any contract for which a Payment Bond is required.

PAYMENT BOND (Page 1)

PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS, That we, _____

hereinafter referred to as the "Principal", and _____

hereinafter referred to as the "Surety" ("Sureties") are held and firmly bound to THE CITY OF NEW YORK, hereinafter referred to as the "City" or to its successors and assigns, in the penal sum of

(\$ _____) Dollars, lawful money of the United States, for the payment of which said sum of money well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal is about to enter, or has entered, into a Contract in writing with the City for

a copy of which Contract is annexed to and hereby made a part of this bond as though herein set forth in full;

NOW, THEREFORE, the conditions of this obligation are such that if the Principal, his or its representatives or assigns and other Subcontractors to whom Work under this Contract is sublet and his or their successors and assigns shall promptly pay or cause to be paid all lawful claims for

(a) Wages and compensation for labor performed and services rendered by all persons engaged in the prosecution of the Work under said Contract, and any amendment or extension thereof or addition thereto, whether such persons be agents servants or employees of the Principal or any such Subcontractor, including all persons so

Payment Bond (Pages 98 to 101): Use for any contract for which a Payment Bond is required.

PAYMENT BOND (Page 2)

engaged who perform the work of laborers or mechanics at or in the vicinity of the site of the Project regardless of any contractual relationship between the Principal or such Subcontractors, or his or their successors or assigns, on the one hand and such laborers or mechanics on the other, but not including office employees not regularly stationed at the site of the project; and

(b) Materials and supplies (whether incorporated in the permanent structure or not), as well as teams, fuels, oils, implements or machinery furnished, used or consumed by said Principal or any subcontractor at or in the vicinity of the site of the Project in the prosecution of the Work under said Contract and any amendment or extension thereof or addition thereto; then this obligation shall be void, otherwise to remain in full force and effect.

This bond is subject to the following additional conditions, limitations and agreements:

(a) The Principal and Surety (Sureties) agree that this bond shall be for the benefit of any materialmen or laborer having a just claim, as well as the City itself.

(b) All persons who have performed labor, rendered services or furnished materials and supplies, as aforesaid, shall have a direct right of action against the Principal and his, its or their successors and assigns, and the Surety (Sureties) herein, or against either or both or any of them and their successors and assigns. Such persons may sue in their own name, and may prosecute the suit to judgment and execution without the necessity of joining with any other persons as party plaintiff.

(c) The Principal and Surety (Sureties) agree that neither of them will hold the City liable for any judgment for costs of otherwise, obtained by either or both of them against a laborer or materialman in a suit brought by either a laborer or materialman under this bond for moneys allegedly due for performing work or furnishing material.

(d) The Surety (Sureties) or its successors and assigns shall not be liable for any compensation recoverable by an employee or laborer under the Workmen's Compensation Law.

(e) In no event shall the Surety (Sureties), or its successors or assigns, be liable for a greater sum than the penalty of this bond or be subject to any suit, action or proceeding hereon that is instituted by any person, firm, or corporation hereunder later than two years after the complete performance of said Contract and final settlement thereof.

The Principal, for himself and his successors and assigns, and the Surety (Sureties), for itself and its successors and assigns, do hereby expressly waive any objection that might be interposed as to the right of the City to require a bond containing the foregoing provisions, and they do hereby further expressly waive any defense which they or either of them might interpose to an action brought hereon by any person, firm or corporation, including subcontractors, materialmen and third persons, for work, labor, services, supplies or material performed rendered, or furnished as aforesaid upon the ground that there is no law authorizing the City to require the foregoing provisions to be placed in this bond.

And the Surety (Sureties), for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of said Surety (Sureties), and its bonds shall be in no way impaired or affected by any extension of time, modification, omission, addition, or change in or of the said Contract or the work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any part thereof, or of any Work to be performed, or any moneys due to become due thereunder and said Surety (Sureties) does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, Subcontractors, and other transferees shall have the same effect as to said Surety (Sureties) as though done or omitted to be done or in relation to said Principal.

Payment Bond (Pages 98 to 101): Use for any contract for which a Payment Bond is required.

PAYMENT BOND (Page 3)

IN WITNESS WHEREOF, the Principal and the Surety (Sureties) have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereunto affixed and these presents to be signed by their proper officers, this _____ day of _____, _____.

(Seal) _____ (L.S.)
Principal

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

(Seal) _____
Surety

By: _____

If the Contractor (Principal) is a partnership, the bond should be signed by each of the individuals who are partners.

If the Contractor (Principal) is a corporation, the bond should be signed in its correct corporate name by a duly authorized officer, agent, or attorney-in-fact.

There should be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts of the Contract.

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of _____ County of _____ ss:

On this _____ day of _____ before me personally came _____ to me known, who, being by me duly sworn did depose and say that he resides at _____ that he is the _____ of the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

State of _____ County of _____ ss:

On this _____ day of _____ before me personally appeared _____ to me known, and known to me to be one of the members of the firm of _____ described in and who executed the foregoing instrument; and he acknowledged to me that he executed the same as and for the act and deed of said firm.

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____ County of _____ ss:

On this _____ day of _____ before me personally appeared _____ to me known, and known to me to be the person described in and who executed the foregoing instrument; and acknowledged that he executed the same.

Notary Public or Commissioner of Deeds

Each executed bond should be accompanied by: (a) appropriate acknowledgments of the respective parties; (b) appropriate duly certified copy of Power of Attorney or other certificate of authority where bond is executed by agent, officer or other representative of Principal or Surety; (c) a duly certified extract from By-Laws or resolutions of Surety under which Power of Attorney or other certificate of authority of its agent, officer or representative was issued, and (d) certified copy of latest published financial statement of assets and liabilities of Surety.

Affix Acknowledgments and Justification of Sureties

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OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

LABOR LAW §220 PREVAILING WAGE SCHEDULE

Workers, Laborers and Mechanics employed on a public work project must receive not less than the prevailing rate of wage and benefits for the classification of work performed by each upon such public work. Pursuant to Labor Law §220 the Comptroller of the City of New York has promulgated this schedule solely for Workers, Laborers and Mechanics engaged by private contractors on New York City public work contracts.

This schedule is a compilation of separate determinations of the prevailing rate of wage and supplements made by the Comptroller for each trade classification listed herein pursuant to New York State Labor Law section 220 (5). The source of the wage and supplement rates, whether a collective bargaining agreement, survey data or other, is listed at the end of each classification.

Agency Chief Contracting Officers should contact the Bureau of Labor Law's Classification Unit with any questions concerning trade classifications, prevailing rates or prevailing practices with respect to procurement on New York City public works contracts. Contractors are advised to review the Comptroller's Prevailing Wage Schedule before bidding on public works contracts. Contractors with questions concerning trade classifications, prevailing rates or prevailing practices with respect to public works contracts in the procurement stage must contact the contracting agency responsible for the procurement.

Any error as to compensation under the prevailing wage law or other information as to trade classification, made by the contracting agency in the contract documents or in any other communication, will not preclude a finding against the contractor of prevailing wage violation.

Any questions concerning trade classifications, prevailing rates or prevailing practices on New York City public works contracts that have already been awarded may be directed to the Bureau of Labor Law's Classification Unit by calling (212) 669-7974. All callers must have the agency name and contract registration number available when calling with questions on public works contracts. Please direct all other compliance issues to: Bureau of Labor Law, Attn: Wasyl Kinach, P.E., Office of the Comptroller, 1 Centre Street, Room 1122, New York, N.Y. 10007; Fax (212) 669-4002.

The appropriate schedule of prevailing wages and benefits must be posted at all public work sites pursuant to Labor Law §220 (3-a) (a).

This schedule is applicable to work performed during the effective period, unless otherwise noted. Changes to this schedule are published on our web site www.comptroller.nyc.gov. Contractors must pay the wages and supplements in effect when the worker, laborer, mechanic performs the work. Preliminary schedules for future one-year periods appear in the City Record on or about June 1 each succeeding year. Final schedules appear on or about July 1 in the City Record and on our web site www.comptroller.nyc.gov.

The Comptroller's Office has attempted to include all overtime, shift and night differential, Holiday, Saturday, Sunday or other premium time work. However, this schedule does not set forth every prevailing practice with respect to such rates with which employers must comply. All such practices are nevertheless part of the employer's prevailing wage obligation and contained in the collective bargaining agreements of the prevailing wage unions. These collective bargaining agreements are available for inspection by appointment. Requests for appointments may be made by calling (212) 669-4443, Monday through Friday between the hours of 9 a.m. and 5 p.m.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Prevailing rates and ratios for apprentices are attached to this schedule in the Appendix. Pursuant to Labor Law §220 (3-e), only apprentices who are individually registered in a bona fide program to which the employer contractor is a participant, registered with the New York State Department of Labor, may be employed on a public work project. Workers who are not journey persons or not registered apprentices pursuant to Labor Law §220 (3-e) may not be substituted for apprentices and must be paid as journey persons.

Public Work construction, reconstruction, demolition, excavation, rehabilitation, repair, renovation, alteration, or improvement contracts awarded pursuant to a Project Labor Agreement ("PLA") in accordance with Labor Law section 222 may have different labor standards for shift, premium and overtime work. Please refer to the PLA's pre-negotiated labor agreements for wage and benefit rates applicable to work performed outside of the regular workday. More information is available at the Mayor's Office of Contract Services (MOCS) web page at <http://www.nyc.gov/html/mocs/html/vendors/pla.shtml>.

All the provisions of Labor Law section 220 remain applicable to PLA work including, but not limited to, the enforcement of prevailing wage requirements by the Comptroller; however, we will enforce shift, premium, overtime and other non-standard rates as they appear in a project's pre-negotiated labor agreement.

In order to meet their obligation to provide prevailing supplemental benefits to each covered employee, employers must either:

- 1) Provide bona-fide benefits which cost the employer no less than the prevailing supplemental benefits rate; or
- 2) Supplement the employee's hourly wage by an amount no less than the prevailing supplemental benefits rate; or
- 3) Provide a combination of bona-fide benefits and wage supplements which cost the employer no less than the prevailing supplemental benefits rate in total.

Particular attention should be given to the supplemental benefits requirement. Although in most instances the payment or provision for supplemental benefits is for each hour worked, some classifications require the payment or provision of supplemental benefits for each hour paid. Consequently, some prevailing practices require benefits to be purchased at the overtime, shift differential, Holiday, Saturday, Sunday or other premium time rate.

Benefits are paid for EACH HOUR WORKED unless otherwise noted.

Wasył Kinach, P.E.
Director of Classifications
Bureau of Labor Law

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OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

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ASBESTOS HANDLER

(Hazardous Material; Disturbs, removes, encapsulates, repairs, or encloses friable asbestos material)

Asbestos Handler

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$36.00

Supplemental Benefit Rate per Hour: \$15.45

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Sunday.

Time and one half the regular hourly rate after 40 hours in any work week.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

Easter

Paid Holidays

None

(Local #78 and Local #12A)

BLASTER

Blaster

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$45.70

Supplemental Benefit Rate per Hour: \$39.69

Blaster (Hydraulic)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$46.49

Supplemental Benefit Rate per Hour: \$39.69

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Blaster - Trac Drill Hydraulic

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$41.20
Supplemental Benefit Rate per Hour: \$39.69

Blaster - Wagon: Air Trac: Quarry Bar: Drillrunners

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$40.44
Supplemental Benefit Rate per Hour: \$39.69

Blaster - Operators of Jack Hammers

Chippers: Spaders: Concrete Breakers: and all other pneumatic tools of like usage: Walk Behind Self Propelled Hydraulic Asphalt and Concrete Breakers: Hydro (Water) Demolition

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$39.43
Supplemental Benefit Rate per Hour: \$39.69

Blaster - Powder Carriers

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$35.66
Supplemental Benefit Rate per Hour: \$39.69

Blaster - Hydraulic Trac Drill Chuck Tender

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$34.42
Supplemental Benefit Rate per Hour: \$39.69

Blaster - Chuck Tender & Nipper

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$33.69
Supplemental Benefit Rate per Hour: \$39.69

Blaster - Magazine Keepers: (Watch Person)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$20.30
Supplemental Benefit Rate per Hour: \$39.69

Overtime Description

Magazine Keepers:

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Time and one half for work performed in excess of forty (40) hours per week and for work performed on Saturdays, Sundays and Holidays.

All Other Employees:

Time and one-half for the first eight hours of work on Saturday and for Make-up Time. Double time for all hours over eight Monday through Friday (except make-up hours) and for all hours worked on Sunday and Holidays.

Overtime

Double time the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

- New Year's Day
- Memorial Day
- Independence Day
- Labor Day
- Columbus Day
- Presidential Election Day
- Thanksgiving Day
- Christmas Day

Paid Holidays

None

Shift Rates

Single shift shall be 8 hours plus an unpaid lunch, starting at 8:00 A.M (or between 6:00 A.M. and 10:00 A.M. on weekdays). When two (2) shifts are employed, each shift shall be 8 hours plus ½ hour unpaid lunch. When three (3) shifts are employed, each shift will work seven and one-half (7 ½) hours, but will be paid for eight (8) hours, since only one-half (½) hour is allowed for mealtime. When two (2) or more shifts are employed, single time will be paid for each shift. The first 8 hours of any and all work performed Monday through Friday inclusive of any off-shift shall be at the single time rate.

(Local #29)

BOILERMAKER

Boilermaker

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$50.45

Supplemental Benefit Rate per Hour: \$41.31

Supplemental Note: For time and one half overtime - \$61.37; For double overtime - \$81.43.

Overtime Description

~~For Repair and Maintenance work.~~

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Double time the regular rate for Sunday.
For New Construction work:
Double time the regular rate after an 8 hour day.
Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
President's Day
Memorial Day
Independence Day
Columbus Day
Election Day
Veteran's Day
Thanksgiving Day
Christmas Day

Quadruple time the regular rate for work on the following holiday(s).

Labor Day

Paid Holidays

Good Friday
Day after Thanksgiving
Day before Christmas
Day before New Year's Day

Shift Rates

When shifts are required, the first shift shall work eight (8) hours at the regular straight-time hourly rate. The second shift shall work seven and one-half (7 ½) hours and receive eight hours at the regular straight time hourly rate plus twenty-five cents (\$0.25) per hour. The third shift shall work seven (7) hours and receive eight hours at the regular straight time hourly rate plus fifty cents (\$0.50) per hour. A thirty (30) minute lunch period shall not be considered as time worked. Work in excess of the above shall be paid overtime at the appropriate new construction work or repair work overtime wage and supplemental benefit hourly rate.

(Local #5)

BRICKLAYER

Bricklayer

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$47.78
Supplemental Benefit Rate per Hour: \$28.03

Overtime

Time and one half the regular rate after a 7 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays

None

Shift Rates

Overtime rates to be paid outside the regular scheduled work day.

(Bricklayer District Council)

CARPENTER - BUILDING COMMERCIAL

Building Commercial

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$49.88

Supplemental Benefit Rate per Hour: \$44.10

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
Washington's Birthday
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Paid Holidays

None

Shift Rates

The second shift will receive one hour at the double time rate of pay for the last hour of the shift; eight hours pay for seven hours of work, nine hours pay for eight hours of work. There must be a first shift in order to work a second shift.

(Carpenters District Council)

CARPENTER - HEAVY CONSTRUCTION WORK
(Construction of Engineering Structures and Building Foundations)

Heavy Construction Work

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$48.35

Supplemental Benefit Rate per Hour: \$46.12

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Presidential Election Day

Thanksgiving Day

Christmas Day

Paid Holidays

None

Shift Rates

Off shift work commencing between 5:00 P.M. and 11:00 P.M. shall work eight and one half hours allowing for one half hour for lunch. The wage rate shall be 113% of the straight time hourly wage rate.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 PREVAILING WAGE SCHEDULE

(Carpenters District Council)

CEMENT & CONCRETE WORKER

Cement & Concrete Worker

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$42.38

Supplemental Benefit Rate per Hour: \$26.17

Supplemental Note: \$28.92 on Saturdays; \$31.67 on Sundays & Holidays

Overtime Description

Time and one half the regular rate after 7 hour day (time and one half the regular rate after an 8 hour day when working with Dockbuilders on pile cap forms and for work below street level to the top of the foundation wall, not to exceed 2 feet or 3 feet above the sidewalk-brick shelf, when working on the foundation and structure.)

Overtime

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Presidential Election Day

Thanksgiving Day

Christmas Day

Paid Holidays

1/2 day before Christmas Day

1/2 day before New Year's Day

Shift Rates

On shift work extending over a twenty-four hour period, all shifts are paid at straight time.

(Cement Concrete Workers District Council)

CEMENT MASON

Cement Mason

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$38.88

Supplemental Benefit Rate per Hour: \$39.80

Supplemental Note: For time and one half overtime - \$49.05; For double overtime - \$58.30

Overtime Description

Time and one-half the regular rate after an 8 hour day, double time the regular rate after 10 hours. Time and one-half the regular rate on Saturday, double time the regular rate after 10 hours. Double time the regular rate on Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Presidential Election Day

Thanksgiving Day

Christmas Day

Paid Holidays

Any worker who reports to work on Christmas Eve or New Year's Eve pursuant to his employer's instruction shall be entitled to three (3) hours afternoon pay without working.

Shift Rates

For an off shift day, (work at times other than the regular 7:00 A.M. to 3:30 P.M. work day) a cement mason shall be paid at the regular hourly rate plus a 25% per hour differential. Four Days a week at Ten (10)hour day.

(Local #780)

CORE DRILLER

Core Driller

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$35.71

Supplemental Benefit Rate per Hour: \$21.69

Core Driller Helper

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$28.60

Supplemental Benefit Rate per Hour: \$21.69

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Core Driller Helper(Third year in the industry)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$25.74

Supplemental Benefit Rate per Hour: \$21.69

Core Driller Helper (Second year in the industry)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$22.88

Supplemental Benefit Rate per Hour: \$21.69

Core Driller Helper (First year in the industry)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$20.02

Supplemental Benefit Rate per Hour: \$21.69

Overtime Description

Time and one half the regular rate for work on a holiday plus Holiday pay when worked.

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Time and one half the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

Shift Rates

The shift day shall be the continuous eight and one-half (8½) hours from 6:00 A.M. to 2:30 P.M. and from 2:30 P.M. to 11:00 P.M., including one-half (½) hour of employees regular rate of pay for lunch. When two (2) or more shifts are employed, single time shall be paid for each shift, but those employees employed on a shift other than from 8:00 A.M. to 5:00 P.M. shall, in addition, receive seventy-five cents (\$0.75) per hour differential for each hour worked. When three (3) shifts are needed, each shift shall work seven and one-half (7 ½) hours paid for eight (8) hours of labor and be permitted one-half (½) hour for mealtime.

(Carpenters District Council)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

DERRICKPERSON AND RIGGER

Derrick Person & Rigger

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$42.25

Supplemental Benefit Rate per Hour: \$47.81

Supplemental Note: The above supplemental rate applies for work performed in Manhattan, Bronx, Brooklyn and Queens. \$49.23 - For work performed in Staten Island.

Overtime Description

The first two hours of overtime on weekdays and the first seven hours of work on Saturdays are paid at time and one half for wages and supplemental benefits. All additional overtimes is paid at double time for wages and supplemental benefits. Deduct \$1.42 from the Staten Island hourly benefits rate before computing overtime.

Overtime

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

Washington's Birthday

Good Friday

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

Paid Holidays

1/2 day on Christmas Eve if work is performed in the A.M.

(Local #197)

DIVER

Diver (Marine)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$61.30

Supplemental Benefit Rate per Hour: \$46.12

Diver Tender (Marine)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$43.45

Supplemental Benefit Rate per Hour: \$46.12

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Presidential Election Day

Thanksgiving Day

Christmas Day

Paid Holidays

None

Shift Rates

When three shifts are utilized each shift shall work seven and one half-hours (7 1/2 hours) and paid for 8 hours, allowing for one half hour for lunch.

(Carpenters District Council)

DOCKBUILDER - PILE DRIVER

Dockbuilder - Pile Driver

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$48.35

Supplemental Benefit Rate per Hour: \$46.12

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays

None

Shift Rates

Off shift work commencing between 5:00 P.M. and 11:00 P.M. shall work eight and one half hours allowing for one half hour for lunch. The wage rate shall be 113% of the straight time hourly wage rate.

(Carpenters District Council)

DRIVER: TRUCK (TEAMSTER)

Driver - Dump Truck

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$38.86

Supplemental Benefit Rate per Hour: \$40.44

Supplemental Note: Over 40 hours worked: time and one half rate \$16.94, double time rate \$22.59

Driver - Tractor Trailer

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$38.88

Supplemental Benefit Rate per Hour: \$41.70

Supplemental Note: For over 40 hours worked: at time and one half - \$15.90; at double time - \$21.21

Driver - Euclid & Turnapull Operator

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$39.44

Supplemental Benefit Rate per Hour: \$41.70

Supplemental Note: Over 40 hours worked: time and one half rate \$15.90, double time rate \$21.21

Overtime Description

For Paid Holidays: Holiday pay for all holidays shall be prorated based two hours per day for each day worked in the holiday week, not to exceed 8 hours of holiday pay. For Thanksgiving week, the prorated share shall be 5 1/3 hours of holiday pay for each day worked in Thanksgiving week.

Overtime

Time and one half the regular rate after an 8 hour day.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays

New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Driver Redi-Mix (Sand & Gravel)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$36.05

Supplemental Benefit Rate per Hour: \$38.60

Supplemental Note: Over 40 hours worked: time and one half rate \$13.53, double time rate \$18.04

Overtime Description

For Paid Holidays: Employees working two (2) days in the calendar week in which the holiday falls are to paid for these holidays, provided they shape each remaining workday during that calendar week.

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

President's Day
Columbus Day
Veteran's Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Triple time the regular rate for work on the following holiday(s).

New Year's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays

New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Election Day
Thanksgiving Day
Christmas Day

(Local #282)

ELECTRICIAN

(Including all low voltage cabling carrying data; video; and voice in combination with data and or video.)

Electrician "A" (Regular Day)

Effective Period: 7/1/2014 - 5/12/2015
Wage Rate per Hour: \$53.00
Supplemental Benefit Rate per Hour: \$47.54

Effective Period: 5/13/2015 - 6/30/2015
Wage Rate per Hour: \$54.00
Supplemental Benefit Rate per Hour: \$50.03

Electrician "A" (Regular Day Overtime)

Effective Period: 7/1/2014 - 5/12/2015
Wage Rate per Hour: \$79.50
Supplemental Benefit Rate per Hour: \$50.86

Effective Period: 5/13/2015 - 6/30/2015
Wage Rate per Hour: \$81.00
Supplemental Benefit Rate per Hour: \$53.41

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Electrician "A" (Day Shift)

Effective Period: 7/1/2014 - 5/12/2015

Wage Rate per Hour: \$53.00

Supplemental Benefit Rate per Hour: \$47.54

Effective Period: 5/13/2015 - 6/30/2015

Wage Rate per Hour: \$54.00

Supplemental Benefit Rate per Hour: \$50.03

Electrician "A" (Day Shift Overtime After 8 hours)

Effective Period: 7/1/2014 - 5/12/2015

Wage Rate per Hour: \$79.50

Supplemental Benefit Rate per Hour: \$50.86

Effective Period: 5/13/2015 - 6/30/2015

Wage Rate per Hour: \$81.00

Supplemental Benefit Rate per Hour: \$53.41

Electrician "A" (Swing Shift)

Effective Period: 7/1/2014 - 5/12/2015

Wage Rate per Hour: \$62.19

Supplemental Benefit Rate per Hour: \$54.07

Effective Period: 5/13/2015 - 6/30/2015

Wage Rate per Hour: \$63.36

Supplemental Benefit Rate per Hour: \$56.94

Electrician "A" (Swing Shift Overtime After 7.5 hours)

Effective Period: 7/1/2014 - 5/12/2015

Wage Rate per Hour: \$93.29

Supplemental Benefit Rate per Hour: \$57.97

Effective Period: 5/13/2015 - 6/30/2015

Wage Rate per Hour: \$95.04

Supplemental Benefit Rate per Hour: \$60.91

Electrician "A" (Graveyard Shift)

Effective Period: 7/1/2014 - 5/12/2015

Wage Rate per Hour: \$69.66

Supplemental Benefit Rate per Hour: \$59.59

Effective Period: 5/13/2015 - 6/30/2015

Wage Rate per Hour: \$70.97

Supplemental Benefit Rate per Hour: \$62.78

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Electrician "A" (Graveyard Shift Overtime After 7 hours)

Effective Period: 7/1/2014 - 5/12/2015

Wage Rate per Hour: \$104.49

Supplemental Benefit Rate per Hour: \$63.96

Effective Period: 5/13/2015 - 6/30/2015

Wage Rate per Hour: \$106.46

Supplemental Benefit Rate per Hour: \$67.23

Overtime

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on a holiday.

New Year's Day

Martin Luther King Jr. Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Paid Holidays

None

Shift Rates

When so elected by the Employer, one or more shifts of at least five days duration may be scheduled as follows:

Day Shift: 8:00 am to 4:30 pm, Swing Shift 4:30 pm to 12:30 am, Graveyard Shift: 12:30 am to 8:00 am.

For multiple shifts of temporary light and/or power, the temporary light and/or power employee shall be paid for 8 hours at the straight time rate. For three or less workers performing 8 hours temporary light and/or power the supplemental benefit rate is \$23.63. Effective 5/13/2015 - \$24.39.

Electrician "M" (First 8 hours)

"M" rated work shall be defined as jobbing: electrical work of limited duration and scope, also consisting of repairs and/or replacement of electrical and tele-data equipment. Includes all work necessary to retrofit, service, maintain and repair all kinds of lighting fixtures and local lighting controls and washing and cleaning of foregoing fixtures.

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Effective Period: 7/1/2014 - 5/12/2015

Wage Rate per Hour: \$27.00

Supplemental Benefit Rate per Hour: \$20.32

First and Second Year "M" Wage Rate Per Hour - Hired on or before 5/10/07: \$26.30

First and Second Year "M" Supplemental Rate- Hired on or before 5/10/07: \$19.96

First and Second Year "M" Wage Rate Per Hour - Hired after 5/10/07: \$22.50

First and Second Year "M" Supplemental Rate- Hired after 5/10/07: \$18.06

Effective Period: 5/13/2015 - 6/30/2015

Wage Rate per Hour: \$27.50

Supplemental Benefit Rate per Hour: \$20.82

First and Second Year "M" Wage Rate Per Hour - Hired on or before 5/10/07: \$26.80

First and Second Year "M" Supplemental Rate- Hired on or before 5/10/07: \$20.46

First and Second Year "M" Wage Rate Per Hour - Hired after 5/10/07: \$23.00

First and Second Year "M" Supplemental Rate- Hired after 5/10/07: \$18.56

Electrician "M" (Overtime After First 8 hours)

"M" rated work shall be defined as jobbing: electrical work of limited duration and scope, also consisting of repairs and/or replacement of electrical and tele-data equipment. Includes all work necessary to retrofit, service, maintain and repair all kinds of lighting fixtures and local lighting controls and washing and cleaning of foregoing fixtures.

Effective Period: 7/1/2014 - 5/12/2015

Wage Rate per Hour: \$40.50

Supplemental Benefit Rate per Hour: \$22.01

First and Second Year "M" Wage Rate Per Hour - Hired on or before 5/10/07: \$39.45

First and Second Year "M" Supplemental Rate- Hired on or before 5/10/07: \$21.61

First and Second Year "M" Wage Rate Per Hour - Hired after 5/10/07: \$33.75

First and Second Year "M" Supplemental Rate- Hired after 5/10/07: \$19.47

Effective Period: 5/13/2015 - 6/30/2015

Wage Rate per Hour: \$41.25

Supplemental Benefit Rate per Hour: \$22.54

First and Second Year "M" Wage Rate Per Hour - Hired on or before 5/10/07: \$40.20

First and Second Year "M" Supplemental Rate- Hired on or before 5/10/07: \$22.14

First and Second Year "M" Wage Rate Per Hour - Hired after 5/10/07: \$34.50

First and Second Year "M" Supplemental Rate- Hired after 5/10/07: \$20.00

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

Martin Luther King Jr. Day

President's Day

Memorial Day

Independence Day

Labor Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays

None

(Local #3)

ELECTRICIAN - ALARM TECHNICIAN

(Scope of Work - Inspect, test, repair, and replace defective, malfunctioning, or broken devices, components and controls of Fire, Burglar and Security Systems)

Alarm Technician

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$30.40

Supplemental Benefit Rate per Hour: \$13.90

Supplemental Note: \$12.40 only after 8 hours worked in a day

Overtime Description

Time and one half the regular rate for work on the following holidays: Columbus Day, Veterans Day, Day after Thanksgiving.

Double time the regular rate for work on the following holidays: New Year's day, Martin Luther King Jr. Day, President's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day.

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Paid Holidays

New Year's Day
Martin Luther King Jr. Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

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§220 PREVAILING WAGE SCHEDULE

Shift Rates

Night Differential is based upon a ten percent (10%) differential between the hours of 4:00 P.M. and 12:30 A.M. and a fifteen percent (15%) differential for the hours 12:00 A.M. to 8:00 A.M.

Vacation

At least 1 year of employment.....ten (10) days
5 years or more of employment.....fifteen (15) days
10 years of employment.....twenty (20) days
Plus one Personal Day per year

Sick Days:
One day per Year

(Local #3)

ELECTRICIAN-STREET LIGHTING WORKER

Electrician - Electro Pole Electrician

Effective Period: 7/1/2014 - 5/19/2015
Wage Rate per Hour: \$53.00
Supplemental Benefit Rate per Hour: \$49.34

Effective Period: 5/20/2015 - 6/30/2015
Wage Rate per Hour: \$54.00
Supplemental Benefit Rate per Hour: \$51.86

Electrician - Electro Pole Foundation Installer

Effective Period: 7/1/2014 - 5/19/2015
Wage Rate per Hour: \$40.18
Supplemental Benefit Rate per Hour: \$37.73

Effective Period: 5/20/2015 - 6/30/2015
Wage Rate per Hour: \$40.93
Supplemental Benefit Rate per Hour: \$39.46

Electrician - Electro Pole Maintainer

Effective Period: 7/1/2014 - 5/19/2015
Wage Rate per Hour: \$34.40
Supplemental Benefit Rate per Hour: \$34.00

Effective Period: 5/20/2015 - 6/30/2015
Wage Rate per Hour: \$35.05
Supplemental Benefit Rate per Hour: \$35.51

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§220 PREVAILING WAGE SCHEDULE

Overtime Description

Electrician - Electro Pole Electrician: Time and one half the regular rate after a 7 hour day and after 5 consecutive days worked per week.

Electrician - Electro Pole Foundation Installer: Time and one half the regular rate after 8 hours within a 24 hour period and Saturday and Sunday.

Electrician - Electro Pole Maintainer: Time and one half the regular rate after a 7 hour day and after 5 consecutive days worked per week. Saturdays and Sundays may be used as a make-up day at straight time when a day is lost during the week to inclement weather.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

Martin Luther King Jr. Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Paid Holidays

None

(Local #3)

ELEVATOR CONSTRUCTOR

Elevator Constructor

Effective Period: 7/1/2014 - 3/16/2015

Wage Rate per Hour: \$58.23

Supplemental Benefit Rate per Hour: \$29.47

Effective Period: 3/17/2015 - 6/30/2015

Wage Rate per Hour: \$59.55

Supplemental Benefit Rate per Hour: \$31.07

Overtime Description

For New Construction: work performed after 7 or 8 hour day, Saturday, Sunday or between 4:30pm and 7:00am shall be paid at double time rate.

Existing buildings: work performed after an 8 hour day, Saturday, Sunday or between 5:30pm and 7:00 am shall be paid time and one half.

Overtime

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\$220 PREVAILING WAGE SCHEDULE

Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Vacation

Employer contributes 8% of regular basic hourly rate as vacation pay for employees with more than 15 years of service, and 6% for employees with 5 to 15 years of service, and 4% for employees with less than 5 years of service.

(Local #1)

ELEVATOR REPAIR & MAINTENANCE

Elevator Service/Modernization Mechanic

Effective Period: 7/1/2014 - 3/16/2015
Wage Rate per Hour: \$46.00
Supplemental Benefit Rate per Hour: \$28.78

Effective Period: 3/17/2015 - 6/30/2015
Wage Rate per Hour: \$46.92
Supplemental Benefit Rate per Hour: \$30.91

Overtime Description

For Service Work: Double time - all work performed on Sundays, Holidays, and between midnight and 7:00am.

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Time and one half the regular rate for Sunday.
Time and one half the regular rate for work on a holiday plus the day's pay.

Paid Holidays

New Year's Day
President's Day
Good Friday
Memorial Day
Independence Day

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§220 PREVAILING WAGE SCHEDULE

Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Shift Rates

For Modernization Work (4pm to 12:30am) - regularly hourly rate plus a (15%) fifteen percent differential.

Vacation

Employer contributes 8% of regular basic hourly rate as vacation pay for employees with more than 15 years of service, and 6% for employees with 5 to 15 years of service, and 4% for employees with less than 5 years of service.

(Local #1)

ENGINEER

Engineer - Heavy Construction Operating Engineer I

Cherry-pickers 20 tons and over and Loaders (rubber tired and/or tractor type with a manufacturer's minimum rated capacity of six cubic yards and over).

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$61.05

Supplemental Benefit Rate per Hour: \$31.93

Supplemental Note: \$57.46 on overtime

Shift Wage Rate: \$97.68

Engineer - Heavy Construction Operating Engineer II

Backhoes, Basin Machines, Groover, Mechanical Sweepers, Bobcat, Boom Truck, Barrier Transport (Barrier Mover) & machines of similar nature. Operation of Churn Drills and machines of a similar nature, Stetco Silent Hoist and machines of similar nature, Vac-Alls, Meyers Machines, John Beam and machines of a similar nature, Ross Carriers and Travel Lifts and machines of a similar nature, Bulldozers, Scrapers and Turn-a-Pulls: Tugger Hoists (Used exclusively for handling excavated material); Tractors with attachments, Hyster and Roustabout Cranes, Cherry-pickers. Austin Western, Grove and machines of a similar nature, Scoopmobiles, Monorails, Conveyors, Trenchers: Loaders-Rubber Tired and Tractor: Barber Greene and Eimco Loaders and Eimco Backhoes; Mighty Midget and similar breakers and Tampers, Curb and Gutter Pavers and Motor Patrol, Motor Graders and all machines of a similar nature. Locomotives 10 Tons or under. Mini-Max, Break-Tech and machines of a similar nature; Milling machines, robotic and demolition machines and machines of a similar nature, shot blaster, skid steer machines and machines of a similar nature including bobcat, pile rig rubber-tired excavator (37,000 lbs. and under), 2 man auger.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$59.24

Supplemental Benefit Rate per Hour: \$31.93

Supplemental Note: \$57.46 on overtime

Shift Wage Rate: \$94.78

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§220 PREVAILING WAGE SCHEDULE

Engineer - Heavy Construction Operating Engineer III

Minor Equipment such as Tractors, Post Hole Diggers, Ditch Witch (Walk Behind), Road Finishing Machines, Rollers five tons and under, Tugger Hoists, Dual Purpose Trucks, Fork Lifts, and Dempsey Dumpers, Fireperson.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$56.22

Supplemental Benefit Rate per Hour: \$31.93

Supplemental Note: \$57.46 on overtime

Shift Wage Rate: \$89.95

Engineer - Heavy Construction Maintenance Engineer I

Installing, Repairing, Maintaining, Dismantling and Manning of all equipment including Steel Cutting, Bending and Heat Sealing Machines, Mechanical Heaters, Grout Pumps, Bentonite Pumps & Plants, Screening Machines, Fusion Coupling Machines, Tunnel Boring Machines Moles and Machines of a similar nature, Power Packs, Mechanical Hydraulic Jacks; all drill rigs including but not limited to Churn, Rotary Caisson, Raised Bore & Drills of a similar nature; Personnel, Inspection & Safety Boats or any boats used to perform functions of same, Mine Hoists, Whirlies, all Climbing Cranes, all Tower Cranes, including but not limited to Truck Mounted and Crawler Type and machines of similar nature; Maintaining Hydraulic Drills and machines of a similar nature; Well Point System-Installation and dismantling; Burning, Welding, all Pumps regardless of size and/or motor power, except River Cofferdam Pumps and Wells Point Pumps; Motorized Buggies (three or more); equipment used in the cleaning and televising of sewers, but not limited to jet-rodder/vacuum truck, vacall/vactor, closed circuit television inspection equipment; high powered water pumps, jet pumps; screed machines and concrete finishing machines of a similar nature; verneers.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$58.97

Supplemental Benefit Rate per Hour: \$31.93

Supplemental Note: \$57.46 on overtime

Shift Wage Rate: \$94.35

Engineer - Heavy Construction Maintenance Engineer II

On Base Mounted Tower Cranes

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$77.30

Supplemental Benefit Rate per Hour: \$31.93

Supplemental Note: \$57.46 on overtime

Shift Wage Rate: \$123.68

Engineer - Heavy Construction Maintenance Engineer III

On Generators, Light Towers

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$39.10

Supplemental Benefit Rate per Hour: \$31.93

Supplemental Note: \$57.46 on overtime

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Shift Wage Rate: \$62.56

Engineer - Heavy Construction Maintenance Engineer IV

On Pumps and Mixers including mud sucking

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$40.11

Supplemental Benefit Rate per Hour: \$31.93

Supplemental Note: \$57.46 on overtime

Shift Wage Rate: \$64.18

Engineer - Heavy Construction Oilers I

Gradalls, Cold Planer Grader, Concrete Pumps, Driving Truck Cranes, Driving and Operating Fuel and Grease Trucks.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$53.22

Supplemental Benefit Rate per Hour: \$31.93

Supplemental Note: \$57.46 on overtime

Shift Wage Rate: \$85.15

Engineer - Heavy Construction Oilers II

All gasoline, electric, diesel or air operated Shovels, Draglines, Backhoes, Keystones, Pavers, Guniting Machines, Battery of Compressors, Crawler Cranes, two-person Trenching Machines.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$36.97

Supplemental Benefit Rate per Hour: \$31.93

Supplemental Note: \$57.46 on overtime

Shift Wage Rate: \$59.15

Engineer - Steel Erection Maintenance Engineers

Derrick, Travelers, Tower, Crawler Tower and Climbing Cranes

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$57.05

Supplemental Benefit Rate per Hour: \$31.93

Supplemental Note: \$57.46 on overtime

Shift Wage Rate: \$91.28

Engineer - Steel Erection Oiler I

On a Truck Crane

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$53.43

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Supplemental Benefit Rate per Hour: \$31.93
Supplemental Note: \$57.46 on overtime
Shift Wage Rate: \$85.49

Engineer - Steel Erection Oiler II

On a Crawler Crane

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$40.84
Supplemental Benefit Rate per Hour: \$31.93
Supplemental Note: \$57.46 on overtime
Shift Wage Rate: \$65.34

Overtime Description

On jobs of more than one shift, if the next shift employee fails to report for work through any cause over which the employer has no control, the employee on duty who works the next shift continues to work at the single time rate.

Overtime

Double time the regular rate after an 8 hour day.
Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.
Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day
Lincoln's Birthday
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

Engineer - Building Work Maintenance Engineers I

Installing, repairing, maintaining, dismantling (of all equipment including: Steel Cutting and Bending Machines, Mechanical Heaters, Mine Hoists, Climbing Cranes, Tower Cranes, Linden Peine, Lorain, Liebherr, Mannes, or machines of a similar nature, Well Point Systems, Deep Well Pumps, Concrete Mixers with loading Device, Concrete Plants, Motor Generators when used for temporary power and lights), skid steer machines of a similar nature including bobcat.

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$54.04

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: \$31.93
Supplemental Note: \$57.46 on overtime

Engineer - Building Work Maintenance Engineers II

On Pumps, Generators, Mixers and Heaters

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$42.10
Supplemental Benefit Rate per Hour: \$31.93
Supplemental Note: \$57.46 on overtime

Engineer - Building Work Oilers I

All gasoline, electric, diesel or air operated Gradealls: Concrete Pumps, Overhead Cranes in Power Houses: Their duties shall be to assist the Engineer in oiling, greasing and repairing of all machines; Driving Truck Cranes: Driving and Operating Fuel and Grease Trucks, Cherrypickers (hydraulic cranes) over 70,000 GVW, and machines of a similar nature.

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$51.40
Supplemental Benefit Rate per Hour: \$31.93
Supplemental Note: \$57.46 on overtime

Engineer - Building Work Oilers II

Oilers on Crawler Cranes, Backhoes, Trenching Machines, Gunite Machines, Compressors (three or more in Battery).

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$38.31
Supplemental Benefit Rate per Hour: \$31.93
Supplemental Note: \$57.46 on overtime

Overtime Description

On jobs of more than one shift, if an Employee fails to report for work through any cause over which the Employer has no control, the Employee on duty will continue to work at the rate of single time.

Overtime

Double time the regular rate after an 8 hour day.
Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.
Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day
Lincoln's Birthday
President's Day
Memorial Day
Independence Day
Labor Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Columbus Day
Veteran's Day
Thanksgiving Day
Christmas Day

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

Shift Rates

Off Shift: double time the regular hourly rate.

(Local #15)

ENGINEER - CITY SURVEYOR AND CONSULTANT

Party Chief

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$35.55

Supplemental Benefit Rate per Hour: \$17.65

Instrument Person

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$29.41

Supplemental Benefit Rate per Hour: \$17.65

Rodperson

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$25.54

Supplemental Benefit Rate per Hour: \$17.65

Overtime Description

Overtime Benefit Rate - \$23.63 per hour (time & one half) \$29.95 per hour (double time).

Time and one half the regular rate after an 8 hour day, Time and one half the regular rate for Saturday for the first eight hours worked, Double time the regular time rate for Saturday for work performed in excess of eight hours, Double time the regular rate for Sunday and Double time the regular rate for work on a holiday.

Paid Holidays

New Year's Day
Lincoln's Birthday
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Christmas Day

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

(Operating Engineer Local #15-D)

ENGINEER - FIELD (BUILDING CONSTRUCTION)
(Construction of Building Projects, Concrete Superstructures, etc.)

Field Engineer - BC Party Chief

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$55.40

Supplemental Benefit Rate per Hour: \$30.62

Supplemental Note: Overtime Benefit Rate - \$42.73 per hour (time & one half) \$54.84 per hour (double time).

Field Engineer - BC Instrument Person

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$43.10

Supplemental Benefit Rate per Hour: \$30.62

Supplemental Note: Overtime Benefit Rate - \$42.73 per hour (time & one half) \$54.84 per hour (double time).

Field Engineer - BC Rodperson

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$27.96

Supplemental Benefit Rate per Hour: \$30.62

Supplemental Note: Overtime Benefit Rate - \$42.73 per hour (time & one half) \$54.84 per hour (double time).

Overtime Description

Time and one half the regular rate after a 7 hour work and time and one half the regular rate for Saturday for the first seven hours worked, Double time the regular time rate for Saturday for work performed in excess of seven hours, Double time the regular rate for Sunday and Double time the regular rate for work on a holiday.

Paid Holidays

New Year's Day

President's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Christmas Day

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

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(Operating Engineer Local #15-D)

ENGINEER - FIELD (HEAVY CONSTRUCTION)
(Construction of Roads, Tunnels, Bridges, Sewers, Building Foundations,
Engineering Structures etc.)

Field Engineer - HC Party Chief

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$62.61

Supplemental Benefit Rate per Hour: \$30.62

Supplemental Note: Overtime benefit rate - \$42.73 per hour (time & one half), \$54.84 per hour (double time).

Field Engineer - HC Instrument Person

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$46.00

Supplemental Benefit Rate per Hour: \$30.62

Supplemental Note: Overtime benefit rate - \$42.73 per hour (time & one half), \$54.84 per hour (double time).

Field Engineer - HC Rodperson

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$38.61

Supplemental Benefit Rate per Hour: \$30.62

Supplemental Note: Overtime benefit rate - \$42.73 per hour (time & one half), \$54.84 per hour (double time).

Overtime Description

Time and one half the regular rate after an 8 hour day, Time and one half the regular rate for Saturday for the first eight hours worked, Double time the regular time rate for Saturday for work performed in excess of eight hours, Double time the regular rate for Sunday and Double time the regular rate for work on a holiday.

Paid Holidays

New Year's Day

Lincoln's Birthday

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Christmas Day

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday.

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§220 PREVAILING WAGE SCHEDULE

(Operating Engineer Local #15-D)

ENGINEER - FIELD (STEEL ERECTION)

Field Engineer - Steel Erection Party Chief

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$58.50

Supplemental Benefit Rate per Hour: \$30.62

Supplemental Note: Overtime benefit rate - \$42.73 per hour (time & one half), \$54.84 per hour (double time).

Field Engineer - Steel Erection Instrument Person

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$45.53

Supplemental Benefit Rate per Hour: \$30.62

Supplemental Note: Overtime benefit rate - \$42.73 per hour (time & one half), \$54.84 per hour (double time).

Field Engineer - Steel Erection Rodperson

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$30.43

Supplemental Benefit Rate per Hour: \$30.62

Supplemental Note: Overtime benefit rate - \$42.73 per hour (time & one half), \$54.84 per hour (double time).

Overtime Description

Time and one half the regular rate for Saturday for the first eight hours worked.

Double time the regular rate for Saturday for work performed in excess of eight hours.

Overtime

Time and one half the regular rate after an 8 hour day.

Double time the regular rate for Sunday.

Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day

Lincoln's Birthday

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Christmas Day

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

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§220 PREVAILING WAGE SCHEDULE

(Operating Engineer Local #15-D)

ENGINEER - OPERATING

Operating Engineer - Road & Heavy Construction I

Back Filling Machines, Cranes, Mucking Machines and Dual Drum Paver.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$67.70

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$108.32

Operating Engineer - Road & Heavy Construction II

Backhoes, Power Shovels, Hydraulic Clam Shells, Steel Erection, Moles and machines of a similar nature.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$70.10

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: 51.75 overtime hours

Shift Wage Rate: \$112.16

Operating Engineer - Road & Heavy Construction III

Mine Hoists, Cranes, etc. (Used as Mine Hoists)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$72.34

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$115.74

Operating Engineer - Road & Heavy Construction IV

Gradealls, Keystones, Cranes on land or water (with digging buckets), Bridge Cranes, Vermeer Cutter and machines of a similar nature, Trenching Machines.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$70.63

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$113.01

Operating Engineer - Road & Heavy Construction V

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Pile Drivers & Rigs (employing Dock Builder foreperson): Derrick Boats, Tunnel Shovels.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$69.23

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$110.77

Operating Engineer - Road & Heavy Construction VI

Mixers (Concrete with loading attachment), Concrete Pavers, Cableways, Land Derricks, Power Houses (Low Air Pressure Units).

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$65.76

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$105.22

Operating Engineer - Road & Heavy Construction VII

Barrier Movers , Barrier Transport and Machines of a Similar Nature.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$53.08

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$84.93

Operating Engineer - Road & Heavy Construction VIII

Utility Compressors

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$41.18

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$51.93

Operating Engineer - Road & Heavy Construction IX

Horizontal Boring Rig

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$62.53

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$100.05

Operating Engineer - Road & Heavy Construction X

Elevators (manually operated as personnel hoist).

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$57.46

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$91.94

Operating Engineer - Road & Heavy Construction XI

Compressors (Portable 3 or more in battery), Driving of Truck Mounted Compressors, Well-point Pumps, Tugger Machines Well Point Pumps, Churn Drill.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$44.63

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$71.41

Operating Engineer - Road & Heavy Construction XII

All Drills and Machines of a similar nature.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$66.45

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$106.32

Operating Engineer - Road & Heavy Construction XIII

Concrete Pumps, Concrete Plant, Stone Crushers, Double Drum Hoist, Power Houses (other than above).

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$64.34

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$102.94

Operating Engineer - Road & Heavy Construction XIV

Concrete Mixer

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$61.53

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$98.45

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Operating Engineer - Road & Heavy Construction XV

Compressors (Portable Single or two in Battery, not over 100 feet apart), Pumps (River Cofferdam) and Welding Machines, Push Button Machines, All Engines Irrespective of Power (Power-Pac) used to drive auxiliary equipment, Air, Hydraulic, etc.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$41.44

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$66.30

Operating Engineer - Road & Heavy Construction XVI

Concrete Breaking Machines, Hoists (Single Drum), Load Masters, Locomotives (over ten tons) and Dinkies over ten tons, Hydraulic Crane-Second Engineer.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$58.74

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.85 overtime hours

Shift Wage Rate: \$93.98

Operating Engineer - Road & Heavy Construction XVII

On-Site concrete plant engineer, On-site Asphalt Plant Engineer, and Vibratory console.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$59.21

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$94.74

Operating Engineer - Road & Heavy Construction XVIII

Tower Crane

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$85.00

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$136.00

Operating Engineer - Paving I

Asphalt Spreaders, Autogrades (C.M.I.), Roto/Mil

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$65.76

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Supplemental Benefit Rate per Hour: \$28.60
Supplemental Note: \$51.75 overtime hours
Shift Wage Rate: \$105.22

Operating Engineer - Paving II

Asphalt Roller

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$64.04
Supplemental Benefit Rate per Hour: \$28.60
Supplemental Note: \$51.75 overtime hours
Shift Wage Rate: \$102.46

Operating Engineer - Paving III

Asphalt Plants

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$54.17
Supplemental Benefit Rate per Hour: \$28.60
Supplemental Note: \$51.75 overtime hours
Shift Wage Rate: \$86.67

Operating Engineer - Concrete I

Cranes

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$70.32
Supplemental Benefit Rate per Hour: \$28.60
Supplemental Note: \$51.75 overtime hours

Operating Engineer - Concrete II

Compressors

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$41.76
Supplemental Benefit Rate per Hour: \$28.60
Supplemental Note: \$51.75 overtime hours

Operating Engineer - Concrete III

Micro-traps (Negative Air Machines), Vac-All Remediation System.

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$56.16
Supplemental Benefit Rate per Hour: \$28.60
Supplemental Note: \$51.75 overtime hours

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Operating Engineer - Steel Erection I

Three Drum Derricks

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$73.37

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$117.39

Operating Engineer - Steel Erection II

Cranes, 2 Drum Derricks, Hydraulic Cranes, Fork Lifts and Boom Trucks.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$70.50

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$112.80

Operating Engineer - Steel Erection III

Compressors, Welding Machines.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$41.84

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$66.94

Operating Engineer - Steel Erection IV

Compressors - Not Combined with Welding Machine.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$39.85

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Shift Wage Rate: \$63.76

Operating Engineer - Building Work I

Forklifts, Plaster (Platform machine), Plaster Bucket, Concrete Pump and all other equipment used for hoisting material.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$57.82

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

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Operating Engineer - Building Work II

Compressors, Welding Machines (Cutting Concrete-Tank Work), Paint Spraying, Sandblasting, Pumps (with the exclusion of Concrete Pumps), All Engines irrespective of Power (Power-Pac) used to drive Auxiliary Equipment, Air, Hydraulic, Jacking System, etc.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$43.28

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Operating Engineer - Building Work III

Double Drum

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$65.83

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Operating Engineer - Building Work IV

Stone Derrick, Cranes, Hydraulic Cranes Boom Trucks.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$69.74

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Operating Engineer - Building Work V

Dismantling and Erection of Cranes, Relief Engineer.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$64.26

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Operating Engineer - Building Work VI

4 Pole Hoist, Single Drum Hoists.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$63.58

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

Operating Engineer - Building Work VII

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Rack & Pinion and House Cars

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$50.53

Supplemental Benefit Rate per Hour: \$28.60

Supplemental Note: \$51.75 overtime hours

For New House Car projects started after 7/1/11 only: Wage Rate per Hour \$40.31

Overtime Description

On jobs of more than one shift, if an Employee fails to report for work through any cause over which the Employer has no control, the Employee on duty will continue to work at the rate of single time.

For House Cars and Rack & Pinion only: Overtime paid at time and one-half for all hours in excess of eight hours in a day, Saturday, Sunday and Holidays worked.

Overtime

Double time the regular rate after an 8 hour day.

Double time the regular time rate for Saturday.

Double time the regular rate for Sunday.

Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day

Lincoln's Birthday

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Employees must work at least one day in the payroll week in which the holiday occurs to receive the paid holiday

Shift Rates

For Steel Erection Only: Shifts may be worked at the single time rate at other than the regular working hours (8:00 A.M. to 4:30 P.M.) on the following work ONLY: Heavy construction jobs on work below the street level, over railroad tracks and on building jobs.

(Operating Engineer Local #14)

FLOOR COVERER

(Interior vinyl composition tile, sheath vinyl linoleum and wood parquet tile including site preparation and synthetic turf not including site preparation)

Floor Coverer

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Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$49.88

Supplemental Benefit Rate per Hour: \$44.10

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Presidential Election Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Paid Holidays

1/2 day on Christmas Eve if work is performed in the A.M.

1/2 day on New Year's Eve if work is performed in the A.M.

Shift Rates

Two shifts may be utilized with the first shift working 8:00 A.M. to the end of the shift at the straight time of pay. The second shift will receive one hour at double time rate for the last hour of the shift. (eight for seven, nine for eight).

(Carpenters District Council)

GLAZIER

(New Construction, Remodeling, and Alteration)

Glazier

Effective Period: 7/1/2014 - 10/31/2014

Wage Rate per Hour: \$42.50

Supplemental Benefit Rate per Hour: \$35.09

Supplemental Note: Supplemental Benefit Overtime Rate: \$43.59

Effective Period: 11/1/2014 - 6/30/2015

Wage Rate per Hour: \$42.85

Supplemental Benefit Rate per Hour: \$35.59

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Supplemental Note: Supplemental Benefit Overtime Rate: \$44.09

Overtime Description

An optional 8th hour can be worked at straight time rate. If 9th hour is worked, then both hours or more (8th & 9th or more) will be at the double time rate of pay.

Overtime

Double time the regular rate after a 7 hour day.

Double time the regular time rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Paid Holidays

None

Shift Rates

Shifts shall be any 7 hours beyond 4:00 P.M. for which the glazier shall receive 8 hours pay for 7 hours worked.

(Local #1281)

GLAZIER - REPAIR & MAINTENANCE

(For the Installation of Glass - All repair and maintenance work on a particular building, whenever performed, where the total cumulative contract value is under \$105,000. Except where enumerated (i.e. plate glass windows) does not apply to non-residential buildings.)

Craft Jurisdiction for repair, maintenance and fabrication

Plate glass replacement, Residential glass replacement, Residential mirrors and shower doors, Storm windows and storm doors, Residential replacement windows, Herculite door repairs, Door closer repairs, Retrofit apartment house (non commercial buildings), Glass tinting.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$23.60

Supplemental Benefit Rate per Hour: \$19.04

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Overtime

Time and one half the regular rate after an 8 hour day.
Double time the regular rate for Sunday.
Time and one half the regular hourly rate after 40 hours in any work week.

Paid Holidays

New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

(Local #1281)

HEAT AND FROST INSULATOR

Heat & Frost Insulator

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$56.98
Supplemental Benefit Rate per Hour: \$34.81

Overtime Description

Double time shall be paid for supplemental benefits during overtime work.
8th hour paid at time and one half.

Overtime

Double time the regular rate after an 8 hour day.
Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).
New Year's Day
Martin Luther King Jr. Day
President's Day
Memorial Day
Independence Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Triple time the regular rate for work on the following holiday(s).
Labor Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
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Paid Holidays

None

Shift Rates

The first shift shall work seven hours at the regular straight time rate. The second and third shift shall work seven hours the regular straight time hourly rate plus a fourteen percent wage and benefit premium. Off hour work in occupied or retail buildings may be worked on weekdays with an increment of \$1.00 per hour and eight hours pay for seven (7) hours worked. Double time will apply for over seven (7) hours worked on weekdays, weekends or holidays.

(Local #12)

**HOUSE WRECKER
(TOTAL DEMOLITION)**

House Wrecker - Tier A

On all work sites the first, second, eleventh and every third House Wrecker thereafter will be Tier A House Wreckers (i.e. 1st, 2nd, 11th, 14th etc). Other House Wreckers may be Tier B House Wreckers.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$34.51

Supplemental Benefit Rate per Hour: \$25.59

House Wrecker - Tier B

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$24.02

Supplemental Benefit Rate per Hour: \$19.12

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Paid Holidays

None

(Mason Tenders District Council)

IRON WORKER - ORNAMENTAL

Iron Worker - Ornamental

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$42.70

Supplemental Benefit Rate per Hour: \$45.77

Supplemental Note: Supplemental benefits are to be paid at the applicable overtime rate when overtime is in effect.

Overtime Description

Time and one half the regular rate after a 7 hour day for a maximum of two hours on any regular work day (the 8th and 9th hour) and double time shall be paid for all work on a regular work day thereafter, time and one half the regular rate for Saturday for the first seven hours of work and double time shall be paid for all work on a Saturday thereafter.

Overtime

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays

None

Shift Rates

For off shift work - 8 hours pay for 7 hours of work. When two or three shifts are employed on a job, Monday through Friday, the workday for each shift shall be seven hours and paid for ten and one-half hours at the single time rate. When two or three shifts are worked on Saturday, Sunday or holidays, each shift shall be seven hours and paid fifteen and three-quarters hours.

(Local #580)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

IRON WORKER - STRUCTURAL

Iron Worker - Structural

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$47.75

Supplemental Benefit Rate per Hour: \$65.35

Supplemental Note: Supplemental benefits are to be paid at the applicable overtime rate when overtime is in effect.

Overtime Description

Monday through Friday- the first eight hours are paid at straight time, the 9th and 10th hours are paid at time and one-half the regular rate, all additional weekday overtime is paid at double the regular rate. Saturdays- the first eight hours are paid at time and one-half the regular rate, double time thereafter. Sunday-all shifts are paid at double time.

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

Paid Holidays

1/2 day on Christmas Eve if work is performed in the A.M.

1/2 day on New Year's Eve if work is performed in the A.M.

Shift Rates

Monday through Friday - First Shift: First eight hours are paid at straight time, the 9th & 10th hours are paid at time and a half, double time paid thereafter. Second and third Shifts: First eight hours are paid at time and one-half, double time thereafter. Saturdays: All shifts, first eight hours paid at time and one-half, double time thereafter: Sunday all shifts are paid at double time.

(Local #40 & #361)

LABORER

(Foundation, Concrete, Excavating, Street Pipe Layer and Common)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

aborer

Excavation and foundation work for buildings, heavy construction, engineering work, and hazardous waste removal in connection with the above work. Landscaping tasks in connection with heavy construction work, engineering work and building projects. Projects include, but are not limited to pollution plants, sewers, parks, subways, bridges, highways, etc.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$39.85

Supplemental Benefit Rate per Hour: \$34.88

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Presidential Election Day

Thanksgiving Day

Christmas Day

aid Holidays

Labor Day

Thanksgiving Day

Shift Rates

When two shifts are employed, single time rate shall be paid for each shift. When three shifts are found necessary, each shift shall work seven and one half hours (7 ½), but shall be paid for eight (8) hours of labor, and be permitted one half hour for lunch.

(Local #731)

LANDSCAPING

(Landscaping tasks, as well as tree pruning, tree removing, spraying and maintenance in connection with the planting of street trees and the planting of trees in city parks but not when such activities are performed as part of, or in connection with, other construction or reconstruction projects.)

Landscaper (Above 6 years experience)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$25.75
Supplemental Benefit Rate per Hour: \$13.80

Landscaper (3 - 6 years experience)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$24.75
Supplemental Benefit Rate per Hour: \$13.80

Landscaper (up to 3 years experience)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$22.25
Supplemental Benefit Rate per Hour: \$13.80

Groundperson

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$22.25
Supplemental Benefit Rate per Hour: \$13.80

Tree Remover / Pruner

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$30.75
Supplemental Benefit Rate per Hour: \$13.80

Landscaper Sprayer (Pesticide Applicator)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$20.75
Supplemental Benefit Rate per Hour: \$13.80

Watering - Plant Maintainer

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$15.75
Supplemental Benefit Rate per Hour: \$13.80

Overtime Description

For all overtime work performed, supplemental benefits shall include an additional seventy-five (\$0.75) cents per hour.

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Time and one half the regular rate for work on a holiday plus the day's pay.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Paid Holidays

New Year's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Shift Rates

Work performed on a 4pm to 12am shift has a 15% differential. Work performed on a 12am to 8am shift has a 20% differential.

(Local #175)

MARBLE MECHANIC

Marble Setter

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$50.85

Supplemental Benefit Rate per Hour: \$34.21

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$51.15

Supplemental Benefit Rate per Hour: \$34.87

Marble Finisher

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$39.99

Supplemental Benefit Rate per Hour: \$33.34

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$40.26

Supplemental Benefit Rate per Hour: \$33.90

Marble Polisher

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$35.96

Supplemental Benefit Rate per Hour: \$25.92

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$36.25

Supplemental Benefit Rate per Hour: \$26.28

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Overtime Description

Supplemental Benefit contributions are to be made at the applicable overtime rates. Time and one half the regular rate after a 7 hour day or time and one half the regular rate after an 8 hour day - chosen by Employer at the start of the project and then would last for the full duration of the project.

Overtime

Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays

None

(Local #7)

MASON TENDER

Mason Tender

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$36.05

Supplemental Benefit Rate per Hour: \$26.74

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays
None

Shift Rates

The Employer may work two (2) shifts with the first shift at the straight time wage rate and the second shift receiving eight (8) hours paid for seven (7) hours work at the straight time wage rate.

(Local #79)

MASON TENDER (INTERIOR DEMOLITION WORKER)

(The erection, building, moving, servicing and dismantling of enclosures, scaffolding, barricades, protection and site safety structures etc., on Interior Demolition jobs.)

Mason Tender Tier A

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$34.99

Supplemental Benefit Rate per Hour: \$21.10

Mason Tender Tier B

On Interior Demolition job sites 33 1/3 % of the employees shall be classified as Tier A Interior Demolition Workers and 66 2/3 % shall be classified as Tier B Interior Demolition Workers; provided that the employer may employ more than 33 1/3 % Tier A Interior Demolition Workers on the job site. Where the number of employees on a job site is not divisible by 3, the first additional employee (above the number of employees divisible by three) shall be a Tier B Interior Demolition Worker, and the second additional employee shall be a Tier A Interior Demolition Worker.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$24.18

Supplemental Benefit Rate per Hour: \$15.42

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays

None

(Local #79)

METALLIC LATHER

Metallic Lather

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$42.03

Supplemental Benefit Rate per Hour: \$41.07

Supplemental Note: Supplemental benefits for overtime are paid at the appropriate overtime rate.

Overtime Description

Overtime would be time and one half the regular rate after a seven (7) or eight (8) hours workday, which would be set at the start of the job.

Overtime

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
Washington's Birthday
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays

1/2 day on Christmas Eve if work is performed in the A.M.

1/2 day on New Year's Eve if work is performed in the A.M.

Shift Rates

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

There shall be either two (2) or three (3) shifts, each shift shall be eight (8) hours with nine (9) hours pay, including one half (½) hour for lunch. Off-Hour Start shall commence after 3:30 P.M. and shall conclude by 6:00 A.M. The first consecutive seven (7) hours shall be at straight time with a differential of twelve dollars (\$12.00) per hour. Fringes shall be paid at the straight time rate.

(Local #46)

MILLWRIGHT

Millwright

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$48.44

Supplemental Benefit Rate per Hour: \$50.52

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Presidential Election Day

Thanksgiving Day

Christmas Day

Paid Holidays

1/2 day on Christmas Eve if work is performed in the A.M.

1/2 day on New Year's Eve if work is performed in the A.M.

Shift Rates

The first shift shall receive the straight time rate of pay. The second shift receives the straight time rate of pay plus fifteen (15%) per cent. Members of the second shift shall be allowed one half hour to eat, with this time being included in the hours of the workday established. There must be a first shift to work a second shift. All additional hours worked shall be paid at the time and one-half rate of pay plus fifteen (15%) per cent for weekday hours.

(Local #740)

MOSAIC MECHANIC

Mosaic Mechanic - Mosaic & Terrazzo Mechanic

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$45.23

Supplemental Benefit Rate per Hour: \$36.59

Supplemental Note: Supplemental benefits for overtime to be paid at the rate of \$47.56 per hour.

Mosaic Mechanic - Mosaic & Terrazzo Finisher

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$43.63

Supplemental Benefit Rate per Hour: \$36.57

Supplemental Note: Supplemental benefits for overtime to be paid at the rate of \$47.54 per hour.

Mosaic Mechanic - Machine Operator Grinder

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$43.63

Supplemental Benefit Rate per Hour: \$36.57

Supplemental Note: Supplemental benefits for overtime to be paid at the rate of \$47.54 per hour.

Overtime

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

Washington's Birthday

Good Friday

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Paid Holidays

None

(Local #7)

PAINTER

Painter - Brush & Roller

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$39.50

Supplemental Benefit Rate per Hour: \$26.12

Supplemental Note: \$30.75 on overtime

Spray & Scaffold / Decorative / Sandblast

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$42.50

Supplemental Benefit Rate per Hour: \$26.12

Supplemental Note: \$30.75 on overtime

Overtime

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Thanksgiving Day

Christmas Day

Paid Holidays

None

(District Council of Painters #9)

PAINTER - SIGN

Designer

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$36.15

Supplemental Benefit Rate per Hour: \$9.66

Journey person

PUBLISH DATE: 7/1/2014

EFFECTIVE PERIOD: JULY 1, 2014 THROUGH JUNE 30, 2015

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OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$33.62

Supplemental Benefit Rate per Hour: \$9.66

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Election Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Shift Rates

All work performed outside the regular 8 hour work day (either 7:00 A.M to 3:30 P.M or 8:00 A.M. to 4:30 P.M) shall be paid at time and one half the regular hourly rate.

(Local #8A-28A)

PAINTER - STRIPER

Striper (paint)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$34.00

Supplemental Benefit Rate per Hour: \$12.60

Supplemental Note: Overtime Supplemental Benefit rate - \$8.35 New Hire Rate (0-3 months) - \$0.00

Lineperson (thermoplastic)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$38.00

Supplemental Benefit Rate per Hour: \$12.60

Supplemental Note: Overtime Supplemental Benefit rate - \$8.35; New Hire Rate (0-3 months) - \$0.00

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Double time the regular rate for Sunday.

Time and one half the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Shift Rates

Employees hired before April 1, 2003: 15% night shift premium differential for work commenced at 9:00 PM or later.

Vacation

Employees with one to two years service shall accrue vacation based on hours worked: 250 hours worked - 1 day vacation; 500 hours worked - 2 days vacation; 750 hours worked - 3 days vacation; 900 hours worked - 4 days vacation; 1,000 hours worked - 5 days vacation. Employees with two to five years service receive two weeks vacation. Employees with five to twenty years service receive three weeks vacation. Employees with twenty to twenty-five years service receive four weeks vacation. Employees with 25 or more years service receive five weeks vacation. Vacation must be taken during winter months. 2 Personal Days except employees hired after 4/1/12 who do not have 2 years of service.

(Local #917)

PAINTER - STRUCTURAL STEEL

Painters on Structural Steel

Effective Period: 7/1/2014 - 9/30/2014

Wage Rate per Hour: \$47.00

Supplemental Benefit Rate per Hour: \$33.58

Effective Period: 10/1/2014 - 6/30/2015

Wage Rate per Hour: \$48.75

Supplemental Benefit Rate per Hour: \$34.58

Painter - Power Tool

Effective Period: 7/1/2014 - 9/30/2014

Wage Rate per Hour: \$53.00

Supplemental Benefit Rate per Hour: \$33.58

Effective Period: 10/1/2014 - 6/30/2015

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Wage Rate per Hour: \$54.75

Supplemental Benefit Rate per Hour: \$34.58

Overtime Description

Supplemental Benefits shall be paid for each hour worked, up to forty (40) hours per week for the period of May 1st to November 15th or up to fifty (50) hours per week for the period of November 16th to April 30th.

Overtime

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

Paid Holidays

None

Shift Rates

Regular hourly rates plus a ten per cent (10%) differential

(Local #806)

PAPERHANGER

Paperhanger

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$41.08

Supplemental Benefit Rate per Hour: \$29.23

Supplemental Note: Supplemental benefits are to be paid at the appropriate straight time and overtime rate.

Overtime

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

President's Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays
None

Shift Rates

Evening shift - 4:30 P.M. to 12:00 Midnight (regular rate of pay); any work performed before 7:00 A.M. shall be at time and one half the regular base rate of pay.

(District Council of Painters #9)

PAVER AND ROADBUILDER

Paver & Roadbuilder - Formsetter

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$44.19

Supplemental Benefit Rate per Hour: \$35.15

Paver & Roadbuilder - Laborer

Paving and road construction work, regardless of material used, including but not limited to preparation of job sites, removal of old surfaces, asphalt and/or concrete, by whatever method, including but not limited to milling; laying of concrete; laying of asphalt for temporary, patchwork, and utility paving (but not production paving); site preparation and incidental work before the installation of rubberized materials and similar surfaces; installation and repair of temporary construction fencing; slurry seal coating, maintenance of safety surfaces; play equipment installation, and other related work.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$40.32

Supplemental Benefit Rate per Hour: \$35.15

Production Paver & Roadbuilder - Screed Person

(Production paving is asphalt paving when using a paving machine or on a project where a paving machine is traditionally used)

Adjustment of paving machinery on production paving jobs.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$45.24

Supplemental Benefit Rate per Hour: \$35.15

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Production Paver & Roadbuilder - Raker

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$44.73

Supplemental Benefit Rate per Hour: \$35.15

Production Paver & Roadbuilder - Shoveler

General laborer (except removal of surfaces - see Paver and Roadbuilder-Laborer) including but not limited to tamper, AC paint and liquid tar work.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$41.44

Supplemental Benefit Rate per Hour: \$35.15

Overtime Description

Veteran's Day is a Paid Holiday for employees working on production paving.

If an employee works New Year's Day or Christmas Day, they receive the single time rate plus 25%.

Employees who work on a holiday listed below receive the straight time rate plus one day's pay for the holiday.

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Paid Holidays

Memorial Day

Independence Day

Labor Day

Presidential Election Day

Thanksgiving Day

Shift Rates

When two shifts are employed, the work period for each shift shall be a continuous eight (8) hours. When three shifts are employed, each shift will work seven and one half (7 ½) hours but will be paid for eight (8) hours since only one half (1/2) hour is allowed for meal time.

When two or more shifts are employed, single time will be paid for each shift.

Night Work - On night work, the first eight (8) hours of work will be paid for at the single time rate, except that production paving work shall be paid at 15% over the single time rate for the screed person, rakers and shovelers directly involved only. All other workers will be exempt. Hours worked over eight (8) hours during said shift shall be paid for at the time and one-half rate.

(Local #1010)

PLASTERER

Plasterer

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$42.43

Supplemental Benefit Rate per Hour: \$27.95

Overtime

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

Martin Luther King Jr. Day

President's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Residential Election Day

Thanksgiving Day

Christmas Day

Paid Holidays

None

Shift Rates

When it is not possible to conduct alteration work during regular work hours, in a building occupied by tenants, said work shall proceed on a shift basis: however work over seven (7) hours in any twenty four (24) hour period, the time after seven (7) hours shall be considered overtime.

The second shift shall start at a time between 3:30 p.m. and 7:00 p.m. and shall consist of seven (7) working hours and shall receive eight (8) hours of wages and benefits at the straight time rate. The workers on the second shift shall be allowed one-half (1/2) hour to eat with this time being included in the seven (7) hours of work.

(Local #530)

PLASTERER - TENDER

Plasterer - Tender

Effective Period: 7/1/2014 - 6/30/2015

PUBLISH DATE: 7/1/2014

EFFECTIVE PERIOD: JULY 1, 2014 THROUGH JUNE 30, 2015

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OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Wage Rate per Hour: \$35.53

Supplemental Benefit Rate per Hour: \$26.31

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

Washington's Birthday

Memorial Day

Independence Day

Labor Day

Presidential Election Day

Thanksgiving Day

Christmas Day

Paid Holidays

None

Shift Rates

When work commences outside regular work hours, workers receive an hour additional (differential) wage and supplement payment. Eight hours pay for seven hours work or nine hours pay for eight hours work.

(Mason Tenders District Council)

PLUMBER

Plumber

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$65.27

Supplemental Benefit Rate per Hour: \$25.78

Supplemental Note: Overtime supplemental benefit rate per hour: \$40.78

Plumber - Temporary Services

Temporary Services - When there are no Plumbers on the job site, there may be three shifts designed to cover the entire twenty-four hour period, including weekends if necessary, at the following rate straight time.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$52.24

Supplemental Benefit Rate per Hour: \$20.20

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Overtime Description

Double time the regular rate after a 7 hour day - unless for new construction site work where the plumbing contract price is \$1.5 million or less, the hours of labor can be 8 hours per day at the employers option. On Alteration jobs when other mechanical trades at the site are working an eighth hour at straight time, then the plumber shall also work an eighth hour at straight time.

Overtime

Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

- New Year's Day
- President's Day
- Memorial Day
- Independence Day
- Labor Day
- Columbus Day
- Veteran's Day
- Thanksgiving Day
- Day after Thanksgiving
- Christmas Day

Shift Rates

Shift work, when directly specified in public agency or authority documents where plumbing contract is \$8 million or less, will be permitted. 30% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shifts Monday to Friday. 50% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shift work performed on weekends. For shift work on holidays, double time wages and fringe benefits shall be paid.

(Plumbers Local #1)

PLUMBER (MECHANICAL EQUIPMENT AND SERVICE)
(Mechanical Equipment and Service work shall include any repair and/or replacement of the present plumbing system.)

Plumber

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$38.27
Supplemental Benefit Rate per Hour: \$12.84

Overtime

Time and one half the regular rate after an 8-hour day.
Time and one half the regular rate for Saturday.
Time and one half the regular rate for Sunday.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day
President's Day
Memorial Day
Independence Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays

None

(Plumbers Local # 1)

**PLUMBER (RESIDENTIAL RATES FOR 1, 2 AND 3 FAMILY HOME
CONSTRUCTION)**

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$45.19

Supplemental Benefit Rate per Hour: \$18.79

Overtime

Double time the regular rate after an 8 hour day.
Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays

None

Shift Rates

30% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shifts Monday to Friday.
50% shift premium shall be paid for wages and fringe benefits for 4:00 pm and midnight shift work performed on weekends. For shift work on holidays, double time wages and fringe benefits shall be paid.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

(Plumbers Local #1)

PLUMBER: PUMP & TANK
Oil Trades (Installation and Maintenance)

Plumber - Pump & Tank

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$62.83

Supplemental Benefit Rate per Hour: \$21.37

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Paid Holidays

None

Shift Rates

All work outside the regular workday (8:00 A.M. to 3:30 P.M.) is to be paid at time and one half the regular hourly rate

(Plumbers Local #1)

**POINTER - WATERPROOFER, CAULKER MECHANIC (EXTERIOR BUILDING
RENOVATION)**

Pointer - Waterproofer, Caulker Mechanic

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$47.41

Supplemental Benefit Rate per Hour: \$24.40

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

Martin Luther King Jr. Day

President's Day

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

Paid Holidays

None

Shift Rates

All work outside the regular work day (an eight hour workday between the hours of 6:00 A.M. and 4:30 P.M.) is to be paid at time and one half the regular rate.

(Bricklayer District Council)

ROOFER

Roofer

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$40.70

Supplemental Benefit Rate per Hour: \$28.67

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

President's Day
Memorial Day
Independence Day
Labor Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays

None

Shift Rates

Second shift - Regular hourly rate plus a 10% differential. Third shift - Regular hourly rate plus a 15% differential.

(Local #8)

**SANDBLASTER - STEAMBLASTER
(Exterior Building Renovation)**

Sandblaster / Steamblaster

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$47.41

Supplemental Benefit Rate per Hour: \$24.40

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

Martin Luther King Jr. Day

President's Day

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

Paid Holidays

None

Shift Rates

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

All work outside the regular work day (an eight hour workday between the hours of 6:00 A.M. and 4:30 P.M.) is to be paid at time and one half the regular rate.

(Bricklayer District Council)

SHEET METAL WORKER

Sheet Metal Worker

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$46.21

Supplemental Benefit Rate per Hour: \$43.89

Supplemental Note: Supplemental benefit contributions are to be made at the applicable overtime rates.

Sheet Metal Worker - Fan Maintenance

(The temporary operation of fans or blowers in new or existing buildings for heating and/or ventilation, and/or air conditioning prior to the completion of the project.)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$36.97

Supplemental Benefit Rate per Hour: \$43.89

Sheet Metal Worker - Duct Cleaner

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$12.90

Supplemental Benefit Rate per Hour: \$8.07

Overtime

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

Martin Luther King Jr. Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 PREVAILING WAGE SCHEDULE

Paid Holidays

None

Shift Rates

Work that can only be performed outside regular working hours (seven hours of work between 7:30 A.M. and 3:30 P.M.) - First shift (work between 3:30 P.M. and 11:30 P.M.) - 10% differential above the established hourly rate.
Second shift (work between 11:30 P.M. and 7:30 A.M.) - 15% differential above the established hourly rate.

For Fan Maintenance: On all full shifts of fan maintenance work the straight time hourly rate of pay will be paid for each shift, including nights, Saturdays, Sundays, and holidays. No journeyman engaged in fan maintenance shall work in excess of forty (40) hours in any work week.

(Local #28)

**SHEET METAL WORKER - SPECIALTY
(Decking & Siding)**

Sheet Metal Specialty Worker

The first worker to perform this work must be paid at the rate of the Sheet Metal Worker. The second and third workers shall be paid the Specialty Worker Rate. The ratio of One Sheet Metal Worker, then Two Specialty workers shall be utilized thereafter.

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$40.78

Supplemental Benefit Rate per Hour: \$23.38

Supplemental Note: Supplemental benefit contributions are to be made at the applicable overtime rates.

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

Martin Luther King Jr. Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Christmas Day

Paid Holidays

PUBLISH DATE: 7/1/2014

EFFECTIVE PERIOD: JULY 1, 2014 THROUGH JUNE 30, 2015

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OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

None

(Local #28)

SHIPYARD WORKER

Shipyard Mechanic - First Class

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$23.83
Supplemental Benefit Rate per Hour: \$2.87

Shipyard Mechanic - Second Class

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$15.44
Supplemental Benefit Rate per Hour: \$2.54

Shipyard Laborer - First Class

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$19.28
Supplemental Benefit Rate per Hour: \$2.69

Shipyard Laborer - Second Class

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$12.36
Supplemental Benefit Rate per Hour: \$2.43

Shipyard Dockhand - First Class

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$22.68
Supplemental Benefit Rate per Hour: \$2.82

Shipyard Dockhand - Second Class

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$14.22
Supplemental Benefit Rate per Hour: \$2.50

Overtime Description

Work performed on holiday is paid double time the regular hourly wage rate plus holiday pay.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Overtime

- Time and one half the regular rate after an 8 hour day.
- Time and one half the regular rate for Saturday.
- Double time the regular rate for Sunday.
- Time and one half the regular hourly rate after 40 hours in any work week.

Paid Holidays

- New Year's Day
- Martin Luther King Jr. Day
- President's Day
- Good Friday
- Memorial Day
- Independence Day
- Labor Day
- Thanksgiving Day
- Day after Thanksgiving
- Christmas Day

Based on Survey Data

SIGN ERECTOR
(Sheet Metal, Plastic, Electric, and Neon)

Sign Erector

- Effective Period: 7/1/2014 - 6/30/2015
- Wage Rate per Hour: \$44.20
- Supplemental Benefit Rate per Hour: \$44.10

Overtime

- Time and one half the regular rate after a 7 hour day.
- Time and one half the regular rate for Saturday.
- Time and one half the regular rate for Sunday.
- Time and one half the regular rate for work on the following holiday(s).

Paid Holidays

- New Year's Day
 - Washington's Birthday
 - Memorial Day
 - Independence Day
 - Labor Day
 - Columbus Day
 - Election Day
 - Thanksgiving Day
 - Day after Thanksgiving
 - Christmas Day
-

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Shift Rates

Time and one half the regular hourly rate is to be paid for all hours worked outside the regular workday either (7:00 A.M. through 2:30 P.M.) or (8:00 A.M. through 3:30 P.M.)

(Local #137)

STEAMFITTER

Steamfitter I

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$53.25

Supplemental Benefit Rate per Hour: \$51.04

Supplemental Note: Overtime supplemental benefit rate: \$101.34

Overtime

Double time the regular rate after a 7 hour day.

Double time the regular time rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Paid Holidays

None

Shift Rates

Work performed between 3:30 P.M. and 7:00 A.M. and on Saturdays, Sundays and Holidays shall be at double time the regular hourly rate and paid at the overtime supplemental benefit rate above.

Steamfitter II

For heating, ventilation, air conditioning and mechanical public works contracts with a dollar value not to exceed \$15,000,000 and for fire protection/sprinkler public works contracts not to exceed \$1,500,000.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$53.25

Supplemental Benefit Rate per Hour: \$51.04

Supplemental Note: Overtime supplemental benefit rate: \$101.34

Overtime

Double time the regular rate after an 8 hour day.

Double time the regular time rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Paid Holidays

None

Shift Rates

May be performed outside of the regular workday except Saturday, Sunday and Holidays. A shift shall consist of eight working hours. All work performed in excess of eight hours shall be paid at double time. No shift shall commence after 7:00 P.M. on Friday or 7:00 P.M. the day before holidays. All work performed after 12:01 A.M. Saturday or 12:01 A.M. the day before a Holiday will be paid at double time. When shift work is performed the wage rate for regular time worked is a thirty percent premium together with fringe benefits.

On Transit Authority projects, where work is performed in the vicinity of tracks all shift work on weekends and holidays may be performed at the regular shift rates.

Local #638

STEAMFITTER - REFRIGERATION AND AIR CONDITIONER (Maintenance and Installation Service Person)

Refrigeration and Air Conditioner Mechanic

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$38.30

Supplemental Benefit Rate per Hour: \$12.76

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Refrigeration and Air Conditioner Service Person V

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$31.47
Supplemental Benefit Rate per Hour: \$11.55

Refrigeration and Air Conditioner Service Person IV

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$26.07
Supplemental Benefit Rate per Hour: \$10.52

Refrigeration and Air Conditioner Service Person III

Filter changing and maintenance thereof, oil and greasing, tower and coil cleaning, scraping and painting, general housekeeping, taking of water samples.

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$22.38
Supplemental Benefit Rate per Hour: \$9.76

Refrigeration and Air Conditioner Service Person II

Filter changing and maintenance thereof, oil and greasing, tower and coil cleaning, scraping and painting, general housekeeping, taking of water samples.

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$18.56
Supplemental Benefit Rate per Hour: \$9.06

Refrigeration and Air Conditioner Service Person I

Filter changing and maintenance thereof, oil and greasing, tower and coil cleaning, scraping and painting, general housekeeping, taking of water samples.

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$13.57
Supplemental Benefit Rate per Hour: \$8.30

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).
New Year's Day
Independence Day
Labor Day
Veteran's Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Thanksgiving Day
Christmas Day

Double time and one half the regular rate for work on the following holiday(s).

Martin Luther King Jr. Day
President's Day
Memorial Day
Columbus Day

Paid Holidays

New Year's Day
Martin Luther King Jr. Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Christmas Day

(Local #638B)

STONE MASON - SETTER

Stone Mason - Setters

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$46.56

Supplemental Benefit Rate per Hour: \$36.40

Overtime

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
Washington's Birthday
Good Friday
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays

1/2 day on Christmas Eve if work is performed in the A.M.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Shift Rates

For all work outside the regular workday (8:00 A.M. to 3:30 P.M. Monday through Friday), the pay shall be straight time plus a ten percent (10%) differential.

(Bricklayers District Council)

TAPER

Drywall Taper

Effective Period: 7/1/2014 - 12/30/2014

Wage Rate per Hour: \$45.32

Supplemental Benefit Rate per Hour: \$22.66

Effective Period: 12/31/2014 - 6/30/2015

Wage Rate per Hour: \$45.82

Supplemental Benefit Rate per Hour: \$22.66

Overtime

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

Martin Luther King Jr. Day

President's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Thanksgiving Day

Christmas Day

Paid Holidays

Any worker who reports to work on Christmas Eve or New Year's Eve pursuant to his employer's instruction shall be entitled to three (3) hours afternoon pay without working.

Shift Rates

Time and one half the regular rate outside the regular work hours (8:00 A.M. through 3:30 P.M.)

(Local #1974)

TELECOMMUNICATION WORKER
(Voice Installation Only)

Telecommunication Worker

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$39.18

Supplemental Benefit Rate per Hour: \$13.19

Supplemental Note: The above rate applies for Manhattan, Bronx, Brooklyn, Queens. \$12.64 for Staten Island only.

Overtime

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Time and one half the regular rate for Sunday.

Overtime Holidays

Time and one half the regular rate for work on the following holiday(s).

New Year's Day

Lincoln's Birthday

Washington's Birthday

Memorial Day

Independence Day

Labor Day

Columbus Day

Election Day

Veteran's Day

Thanksgiving Day

Christmas Day

Paid Holidays

New Year's Day

Lincoln's Birthday

Washington's Birthday

Memorial Day

Independence Day

Labor Day

Columbus Day

Election Day

Veteran's Day

Thanksgiving Day

Christmas Day

Employees have the option of observing either Martin Luther King's Birthday or the day after Thanksgiving instead of Lincoln's Birthday

Shift Rates

For any workday that starts before 8A.M. or ends after 6P.M. there is a 10% differential for the applicable worker's hourly rate.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Vacation

After 6 months.....one week.
After 12 months but less than 7 years.....two weeks.
After 7 or more but less than 15 years.....three weeks.
After 15 years or more but less than 25 years.....four weeks.

(C.W.A.)

TILE FINISHER

Tile Finisher

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$38.80
Supplemental Benefit Rate per Hour: \$28.03

Overtime

Time and one half the regular rate after a 7 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays

None

Shift Rates

Off shift work day (work performed outside the regular 8:00 A.M. to 3:30 P.M. workday): shift differential of one and one quarter (1¼) times the regular straight time rate of pay for the seven hours of actual off-shift work.

(Local #7)

TILE LAYER - SETTER

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 PREVAILING WAGE SCHEDULE

Tile Layer - Setter

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$49.88

Supplemental Benefit Rate per Hour: \$32.36

Overtime

Time and one half the regular rate after a 7 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

New Year's Day

President's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Veteran's Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Shift Rates

Off shift work day (work performed outside the regular 8:00 A.M. to 3:30 P.M. workday): shift differential of one and one quarter (1¼) times the regular straight time rate of pay for the seven hours of actual off-shift work.

(Local #7)

TIMBERPERSON

Timberperson

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$44.33

Supplemental Benefit Rate per Hour: \$45.39

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Saturday may be used as a make-up day at straight time when a day is lost during that week to inclement weather.

Time and one half the regular hourly rate after 40 hours in any work week.

Overtime Holidays

PUBLISH DATE: 7/1/2014

EFFECTIVE PERIOD: JULY 1, 2014 THROUGH JUNE 30, 2015

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OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 PREVAILING WAGE SCHEDULE

Double time the regular rate for work on the following holiday(s).

New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Presidential Election Day
Thanksgiving Day
Christmas Day

Paid Holidays

None

Shift Rates

Off shift work commencing between 5:00 P.M. and 11:00 P.M. shall work eight and one half hours allowing for one half hour for lunch. The wage rate shall be 113% of the straight time hourly wage rate.

(Local #1536)

TUNNEL WORKER

Blasters, Mucking Machine Operators (Compressed Air Rates)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$54.20
Supplemental Benefit Rate per Hour: \$48.20

Tunnel Workers (Compressed Air Rates)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$52.31
Supplemental Benefit Rate per Hour: \$46.59

Top Nipper (Compressed Air Rates)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$51.35
Supplemental Benefit Rate per Hour: \$45.78

Outside Lock Tender, Outside Gauge Tender, Muck Lock Tender (Compressed Air Rates)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$50.42
Supplemental Benefit Rate per Hour: \$44.91

Bottom Bell & Top Bell Signal Person: Shaft Person (Compressed Air Rates)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$50.42
Supplemental Benefit Rate per Hour: \$44.92

Changehouse Attendant: Powder Watchperson (Compressed Air Rates)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$43.94
Supplemental Benefit Rate per Hour: \$42.55

Blasters (Free Air Rates)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$51.72
Supplemental Benefit Rate per Hour: \$46.03

Tunnel Workers (Free Air Rates)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$49.48
Supplemental Benefit Rate per Hour: \$44.06

I Others (Free Air Rates)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$45.73
Supplemental Benefit Rate per Hour: \$40.75

Microtunneling (Free Air Rates)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$39.58
Supplemental Benefit Rate per Hour: \$35.25

Overtime Description

For Repair-Maintenance Work on Existing Equipment and Facilities - Time and one half the regular rate after a 7 hour day, or for Saturday, or for Sunday. Double time the regular rate for work on a holiday.
For Small-Bore Micro Tunneling Machines - Time and one-half the regular rate shall be paid for all overtime.

Overtime

Double time the regular rate after an 8 hour day.
Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.
Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 PREVAILING WAGE SCHEDULE

Lincoln's Birthday
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Election Day
Veteran's Day
Thanksgiving Day
Christmas Day

(Local #147)

**WELDER
TO BE PAID AT THE RATE OF THE JOURNEYPERSON IN THE TRADE
PERFORMING THE WORK.**

OFFICE OF THE COMPTROLLER

CITY OF NEW YORK

220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

APPENDIX

Pursuant to Labor Law §220 (3-e), only apprentices who are individually registered in a bona fide program to which the employer contractor is a participant and registered with the New York State Department of Labor, may be employed on a public work project.

Any employee listed on a payroll at an apprentice wage rate, who is not registered as above, shall be paid the journey person wage rate for the classification of work he actually performed.

Apprentice ratios are established to ensure the proper safety, training and supervision of apprentices. A ratio establishes the number of journey workers required for each apprentice in a program and on a job site. Ratios are interpreted as follows: in the case of a 1:1, 1:4 ratio, there must be one journey worker for the first apprentice, and four additional journey workers for each subsequent apprentice.

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ASBESTOS HANDLER

(Ratio of Apprentice Journeyman: 1 to 1, 1 to 3)

Asbestos Handler (First 1000 Hours)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 78% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$15.45

Asbestos Handler (Second 1000 Hours)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 80% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$15.45

Asbestos Handler (Third 1000 Hours)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 83% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$15.45

Asbestos Handler (Fourth 1000 Hours)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 89% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$15.45

(Local #78)

BOILERMAKER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

Boilermaker (First Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 65% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$29.74

Boilermaker (Second Year: 1st Six Months)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 75% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$31.40

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Boilermaker (Second Year: 2nd Six Months)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 75% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$33.05

Boilermaker (Third Year: 1st Six Months)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 80% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$34.69

Boilermaker (Third Year: 2nd Six Months)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 85% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$36.34

Boilermaker (Fourth Year: 1st Six Months)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 90% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$38.00

Boilermaker (Fourth Year: 2nd Six Months)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 95% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$39.65

(Local #5)

BRICKLAYER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

Bricklayer (First 750 Hours)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyman's rate
Supplemental Benefit Rate Per Hour: \$17.10

Bricklayer (Second 750 Hours)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 60% of Journeyman's rate

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate Per Hour: \$17.10

Bricklayer (Third 750 Hours)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$17.10

Bricklayer (Fourth 750 Hours)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$17.10

Bricklayer (Fifth 750 Hours)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 90% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$17.10

Bricklayer (Sixth 750 Hours)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 95% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$17.10

Bricklayer District Council)

CARPENTER

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Carpenter (First Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 40% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$30.25

Carpenter (Second Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$30.25

Carpenter (Third Year)

Effective Period: 7/1/2014 - 6/30/2015

PUBLISH DATE: 7/1/2014

EFFECTIVE PERIOD: JULY 1, 2014 THROUGH JUNE 30, 2015

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$30.25

Carpenter (Fourth Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$30.25

(Carpenters District Council)

CEMENT MASON
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Cement Mason (First Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 50% of Journeyperson's Rate

Cement Mason (Second Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 60% of Journeyperson's Rate

Cement Mason (Third Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 70% of Journeyperson's Rate

(Local #780)

CEMENT AND CONCRETE WORKER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Cement & Concrete Worker (0 - 500 hours)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$18.04

Cement & Concrete Worker (501 - 1000 hours)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 65% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: \$18.87

Cement & Concrete Worker (1001 - 2000 hours)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 65% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: \$24.25

Cement & Concrete Worker (2001 - 4000 hours)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 80% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: \$25.07

(Cement Concrete Workers District Council)

DERRICKPERSON & RIGGER (STONE)

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Derrickperson & Rigger (stone) - First Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 50% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: 50% of Journeyperson's rate

Derrickperson & Rigger (stone) - Second Year: 1st Six Months

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 70% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: 75% of Journeyperson's rate

Derrickperson & Rigger (stone) - Second Year: 2nd Six Months

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 80% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: 75% of Journeyperson's rate

Derrickperson & Rigger (stone) - Third Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 90% of Journeyperson's rate

Supplemental Benefit Rate Per Hour: 75% of Journeyperson's rate

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

(Local #197)

DOCKBUILDER/PILE DRIVER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 6)

Dockbuilder/Pile Driver (First Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 40% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$31.26

Dockbuilder/Pile Driver (Second Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$31.26

Dockbuilder/Pile Driver (Third Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$31.26

Dockbuilder/Pile Driver (Fourth Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: \$31.26

(Carpenters District Council)

ELECTRICIAN
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Electrician (First Term: 0-6 Months)

Effective Period: 7/1/2014 - 5/12/2015
Wage Rate per Hour: \$12.50
Supplemental Benefit Rate per Hour: \$11.10
Overtime Supplemental Rate Per Hour: \$11.93

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 5/13/2015 - 6/30/2015

Wage Rate per Hour: \$13.00

Supplemental Benefit Rate per Hour: \$11.61

Overtime Supplemental Rate Per Hour: \$12.47

Electrician (First Term: 7-12 Months)

Effective Period: 7/1/2014 - 5/12/2015

Wage Rate per Hour: \$13.50

Supplemental Benefit Rate per Hour: \$11.62

Overtime Supplemental Rate Per Hour: \$12.51

Effective Period: 5/13/2015 - 6/30/2015

Wage Rate per Hour: \$14.00

Supplemental Benefit Rate per Hour: \$12.12

Overtime Supplemental Rate Per Hour: \$13.04

Electrician (Second Term: 0-6 Months)

Effective Period: 7/1/2014 - 5/12/2015

Wage Rate per Hour: \$14.50

Supplemental Benefit Rate per Hour: \$12.13

Overtime Supplemental Rate Per Hour: \$13.08

Effective Period: 5/13/2015 - 6/30/2015

Wage Rate per Hour: \$15.00

Supplemental Benefit Rate per Hour: \$12.63

Overtime Supplemental Rate Per Hour: \$13.62

Electrician (Second Term: 7-12 Months)

Effective Period: 7/1/2014 - 5/12/2015

Wage Rate per Hour: \$15.50

Supplemental Benefit Rate per Hour: \$12.64

Overtime Supplemental Rate Per Hour: \$13.66

Effective Period: 5/13/2015 - 6/30/2015

Wage Rate per Hour: \$16.00

Supplemental Benefit Rate per Hour: \$13.14

Overtime Supplemental Rate Per Hour: \$14.19

Electrician (Third Term: 0-6 Months)

Effective Period: 7/1/2014 - 5/12/2015

Wage Rate per Hour: \$16.50

Supplemental Benefit Rate per Hour: \$13.15

Overtime Supplemental Rate Per Hour: \$14.23

Effective Period: 5/13/2015 - 6/30/2015

Wage Rate per Hour: \$17.00

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: \$13.65
Overtime Supplemental Rate Per Hour: \$14.77

Electrician (Third Term: 7-12 Months)

Effective Period: 7/1/2014 - 5/12/2015
Wage Rate per Hour: \$17.50
Supplemental Benefit Rate per Hour: \$13.65
Overtime Supplemental Rate Per Hour: \$14.81

Effective Period: 5/13/2015 - 6/30/2015
Wage Rate per Hour: \$18.00
Supplemental Benefit Rate per Hour: \$14.16
Overtime Supplemental Rate Per Hour: \$15.34

Electrician (Fourth Term: 0-6 Months)

Effective Period: 7/1/2014 - 5/12/2015
Wage Rate per Hour: \$18.50
Supplemental Benefit Rate per Hour: \$14.16
Overtime Supplemental Rate Per Hour: \$15.38

Effective Period: 5/13/2015 - 6/30/2015
Wage Rate per Hour: \$19.00
Supplemental Benefit Rate per Hour: \$14.67
Overtime Supplemental Rate Per Hour: \$15.92

Electrician (Fourth Term: 7-12 Months)

Effective Period: 7/1/2014 - 5/12/2015
Wage Rate per Hour: \$20.50
Supplemental Benefit Rate per Hour: \$15.18
Overtime Supplemental Rate Per Hour: \$16.53

Effective Period: 5/13/2015 - 6/30/2015
Wage Rate per Hour: \$21.00
Supplemental Benefit Rate per Hour: \$15.68
Overtime Supplemental Rate Per Hour: \$17.07

Electrician (Fifth Term: 0-12 Months - Hired on or after 5/10/07)

Effective Period: 7/1/2014 - 5/12/2015
Wage Rate per Hour: \$22.50
Supplemental Benefit Rate per Hour: \$18.06
Overtime Supplemental Rate Per Hour: \$19.47

Effective Period: 5/13/2015 - 6/30/2015
Wage Rate per Hour: \$23.00
Supplemental Benefit Rate per Hour: \$18.56
Overtime Supplemental Rate Per Hour: \$20.00

Electrician (Fifth Term: 13-18 Months - Hired on or after 5/10/07)

Effective Period: 7/1/2014 - 5/12/2015
Wage Rate per Hour: \$27.00
Supplemental Benefit Rate per Hour: \$20.32
Overtime Supplemental Rate Per Hour: \$22.01

Effective Period: 5/13/2015 - 6/30/2015
Wage Rate per Hour: \$27.50
Supplemental Benefit Rate per Hour: \$20.82
Overtime Supplemental Rate Per Hour: \$22.54

Electrician (Fifth Term: 0-18 Months - Hired before 5/10/07)

Effective Period: 7/1/2014 - 5/12/2015
Wage Rate per Hour: \$26.30
Supplemental Benefit Rate per Hour: \$19.96
Overtime Supplemental Rate Per Hour: \$21.61

Effective Period: 5/13/2015 - 6/30/2015
Wage Rate per Hour: \$26.80
Supplemental Benefit Rate per Hour: \$20.46
Overtime Supplemental Rate Per Hour: \$22.14

Overtime Description

Overtime Wage paid at time and one half the regular rate
For "A" rated Apprentices (work in excess of 7 hours per day)
For "M" rated Apprentices (work in excess of 8 hours per day)

(Local #3)

ELEVATOR CONSTRUCTOR
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 2)

Elevator (Constructor) - First Year

Effective Period: 7/1/2014 - 3/16/2015
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: \$25.46

Effective Period: 3/17/2015 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: \$26.94

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Elevator (Constructor) - Second Year

Effective Period: 7/1/2014 - 3/16/2015
Wage Rate Per Hour: 55% of Journeyman's rate
Supplemental Rate Per Hour: \$25.86

Effective Period: 3/17/2015 - 6/30/2015
Wage Rate Per Hour: 55% of Journeyman's rate
Supplemental Rate Per Hour: \$27.35

Elevator (Constructor) - Third Year

Effective Period: 7/1/2014 - 3/16/2015
Wage Rate Per Hour: 65% of Journeyman's rate
Supplemental Rate Per Hour: \$26.66

Effective Period: 3/17/2015 - 6/30/2015
Wage Rate Per Hour: 65% of Journeyman's rate
Supplemental Rate Per Hour: \$28.17

Elevator (Constructor) - Fourth Year

Effective Period: 7/1/2014 - 3/16/2015
Wage Rate Per Hour: 75% of Journeyman's rate
Supplemental Rate Per Hour: \$27.46

Effective Period: 3/17/2015 - 6/30/2015
Wage Rate Per Hour: 75% of Journeyman's rate
Supplemental Rate Per Hour: \$29.00

(Local #1)

ELEVATOR REPAIR & MAINTENANCE
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 2)

Elevator Service/Modernization Mechanic (First Year)

Effective Period: 7/1/2014 - 3/16/2015
Wage Rate Per Hour: 50% of Journeyman's rate
Supplemental Benefit Per Hour: \$24.85

Effective Period: 3/17/2015 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyman's rate
Supplemental Benefit Per Hour: \$26.87

Elevator Service/Modernization Mechanic (Second Year)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 3/16/2015
Wage Rate Per Hour: 55% of Journeyman's rate
Supplemental Benefit Per Hour: \$25.24

Effective Period: 3/17/2015 - 6/30/2015
Wage Rate Per Hour: 55% of Journeyman's rate
Supplemental Benefit Per Hour: \$27.27

Elevator Service/Modernization Mechanic (Third Year)

Effective Period: 7/1/2014 - 3/16/2015
Wage Rate Per Hour: 65% of Journeyman's rate
Supplemental Benefit Per Hour: \$26.02

Effective Period: 3/17/2015 - 6/30/2015
Wage Rate Per Hour: 65% of Journeyman's rate
Supplemental Benefit Per Hour: \$28.08

Elevator Service/Modernization Mechanic (Fourth Year)

Effective Period: 7/1/2014 - 3/16/2015
Wage Rate Per Hour: 75% of Journeyman's rate
Supplemental Benefit Per Hour: \$26.81

Effective Period: 3/17/2015 - 6/30/2015
Wage Rate Per Hour: 75% of Journeyman's rate
Supplemental Benefit Per Hour: \$28.89

(Local #1)

ENGINEER
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 5)

Engineer - First Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$22.49
Supplemental Benefit Rate per Hour: \$20.68

Engineer - Second Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$28.11
Supplemental Benefit Rate per Hour: \$20.68

Engineer - Third Year

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$20.92
Supplemental Benefit Rate per Hour: \$20.68

Engineer - Fourth Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$33.73
Supplemental Benefit Rate per Hour: \$20.68

(Local #15)

ENGINEER - OPERATING
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 5)

Operating Engineer - First Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour 40% of Journeyperson's Rate
Supplemental Benefit Per Hour: \$18.60

Operating Engineer - Second Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyperson's Rate
Supplemental Benefit Per Hour: \$18.60

Operating Engineer - Third Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 60% of Journeyperson's Rate
Supplemental Benefit Per Hour: \$18.60

(Local #14)

FLOOR COVERER
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Floor Coverer (First Year)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 40% of Journeyman's rate
Supplemental Rate Per Hour: \$30.25

Floor Coverer (Second Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyman's rate
Supplemental Rate Per Hour: \$30.25

Floor Coverer (Third Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 65% of Journeyman's rate
Supplemental Rate Per Hour: \$30.25

Floor Coverer (Fourth Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 80% of Journeyman's rate
Supplemental Rate Per Hour: \$30.25

(Carpenters District Council)

GLAZIER
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

Glazier (First Year)

Effective Period: 7/1/2014 - 10/31/2014
Wage Rate Per Hour: 40% of Journeyman's rate
Supplemental Rate Per Hour: \$12.97

Effective Period: 11/1/2014 - 6/30/2015
Wage Rate Per Hour: 40% of Journeyman's rate
Supplemental Rate Per Hour: \$13.12

Glazier (Second Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyman's rate
Supplemental Rate Per Hour: \$22.25

Glazier (Third Year)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 10/31/2014
Wage Rate Per Hour: 60% of Journeyman's rate
Supplemental Rate Per Hour: \$24.75

Effective Period: 11/1/2014 - 6/30/2015
Wage Rate Per Hour: 60% of Journeyman's rate
Supplemental Rate Per Hour: \$25.10

Glazier (Fourth Year)

Effective Period: 7/1/2014 - 10/31/2014
Wage Rate Per Hour: 80% of Journeyman's rate
Supplemental Rate Per Hour: \$29.87

Effective Period: 11/1/2014 - 6/30/2015
Wage Rate Per Hour: 80% of Journeyman's rate
Supplemental Rate Per Hour: \$30.02

(Local #1281)

**HEAT & FROST INSULATOR
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)**

Heat & Frost Insulator (First Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 40% of Journeyman's rate

Heat & Frost Insulator (Second Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 60% of Journeyman's rate

Heat & Frost Insulator (Third Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 70% of Journeyman's rate

Heat & Frost Insulator (Fourth Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 80% of Journeyman's rate

(Local #12)

**HOUSE WRECKER
(TOTAL DEMOLITION)
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)**

House Wrecker - First Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$20.52
Supplemental Benefit Rate per Hour: \$16.60

House Wrecker - Second Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$21.67
Supplemental Benefit Rate per Hour: \$16.60

House Wrecker - Third Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$23.27
Supplemental Benefit Rate per Hour: \$16.60

House Wrecker - Fourth Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$25.83
Supplemental Benefit Rate per Hour: \$16.60

(Mason Tenders District Council)

**IRON WORKER - ORNAMENTAL
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)**

Iron Worker (Ornamental) - 1st Ten Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyman's rate
Supplemental Rate Per Hour: \$35.15

Iron Worker (Ornamental) - 11 -16 Months

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§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 55% of Journeyperson's rate
Supplemental Rate Per Hour: \$36.21

Iron Worker (Ornamental) - 17 - 22 Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: \$37.27

Iron Worker (Ornamental) - 23 - 28 Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Rate Per Hour: \$39.40

Iron Worker (Ornamental) - 29 - 36 Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: \$41.52

(Local #580)

IRON WORKER - STRUCTURAL
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 6)

Iron Worker (Structural) - 1st Six Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$24.98
Supplemental Benefit Rate per Hour: \$45.53

Iron Worker (Structural) - 7- 18 Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$25.58
Supplemental Benefit Rate per Hour: \$45.53

Iron Worker (Structural) - 19 - 36 months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$26.18
Supplemental Benefit Rate per Hour: \$45.53

Local #40 and #361

LABORER (FOUNDATION, CONCRETE, EXCAVATING, STREET PIPE LAYER & COMMON)
(Ratio Apprentice to Journeyman: 1 to 1, 1 to 3)

Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) - First 1000 hours

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyman's rate
Supplemental Rate Per Hour: \$34.88

Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) - Second 1000 hours

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 60% of Journeyman's rate
Supplemental Rate Per Hour: \$34.88

Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) - Third 1000 hours

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 75% of Journeyman's rate
Supplemental Rate Per Hour: \$34.88

Laborer (Foundation, Concrete, Excavating, Street Pipe Layer & Common) - Fourth 1000 hours

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 90% of Journeyman's rate
Supplemental Rate Per Hour: \$34.88

(Local #731)

MARBLE MECHANICS
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

Cutters & Setters - First 750 Hours

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 50% of Journeyman's rate

NO BENEFITS PAID DURING THE FIRST TWO MONTHS (PROBATIONARY PERIOD)

Cutters & Setters - Second 750 Hours

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 55% of Journeyman's rate

Cutters & Setters - Third 750 Hours

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 65% of Journeyman's rate

Cutters & Setters - Fourth 750 Hours

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 75% of Journeyman's rate

Cutters & Setters - Fifth 750 Hours

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 85% of Journeyman's rate

Cutters & Setters - Sixth 750 Hours

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 95% of Journeyman's rate

Polishers & Finishers - First 750 Hours

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 50% of Journeyman's rate

NO BENEFITS PAID DURING THE FIRST TWO MONTHS (PROBATIONARY PERIOD)

Polishers & Finishers - Second 750 Hours

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 60% of Journeyman's rate

Polishers & Finishers - Third 750 Hours

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 75% of Journeyman's rate

Polishers & Finishers - Fourth 750 Hours

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 90% of Journeyman's rate

(Local #7)

MASON TENDER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

Mason Tender - First Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$20.99

Supplemental Benefit Rate per Hour: \$17.86

Mason Tender - Second Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$22.14

Supplemental Benefit Rate per Hour: \$17.86

Mason Tender - Third Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$23.84

Supplemental Benefit Rate per Hour: \$17.86

Mason Tender - Fourth Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$26.50

Supplemental Benefit Rate per Hour: \$17.86

(Local #79)

METALLIC LATHER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

Metallic Lather (First Year -Called Prior to 6/29/11)

PUBLISH DATE: 7/1/2014

EFFECTIVE PERIOD: JULY 1, 2014 THROUGH JUNE 30, 2015

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OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$28.11
Supplemental Benefit Rate per Hour: \$22.79

Metallic Lather (Second Year - Called Prior to 6/29/11)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$32.71
Supplemental Benefit Rate per Hour: \$24.44

Metallic Lather (Third Year - Called Prior to 6/29/11)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$37.77
Supplemental Benefit Rate per Hour: \$25.59

Metallic Lather (First Year -Called On Or After 6/29/11)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$17.71
Supplemental Benefit Rate per Hour: \$19.85

Metallic Lather (Second Year - Called On Or After 6/29/11)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$22.81
Supplemental Benefit Rate per Hour: \$19.85

Metallic Lather (Third Year - Called On Or After 6/29/11)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$27.91
Supplemental Benefit Rate per Hour: \$19.85

(Local #46)

MILLWRIGHT
(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Millwright (First Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$26.64

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
\$220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Supplemental Benefit Rate per Hour: \$32.84

Millwright (Second Year)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$31.49

Supplemental Benefit Rate per Hour: \$36.18

Millwright (Third Year)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$36.33

Supplemental Benefit Rate per Hour: \$40.66

Millwright (Fourth Year)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$46.02

Supplemental Benefit Rate per Hour: \$46.24

(Local #740)

PAVER AND ROADBUILDER

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Paver and Roadbuilder - First Year (Minimum 1000 hours)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$26.61

Supplemental Benefit Rate per Hour: \$16.50

Paver and Roadbuilder - Second Year (Minimum 1000 hours)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$28.22

Supplemental Benefit Rate per Hour: \$16.50

(Local #1010)

PAINTER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

Painter - Brush & Roller - First Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$15.80
Supplemental Benefit Rate per Hour: \$11.88

Painter - Brush & Roller - Second Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$19.75
Supplemental Benefit Rate per Hour: \$15.73

Painter - Brush & Roller - Third Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$23.70
Supplemental Benefit Rate per Hour: \$18.64

Painter - Brush & Roller - Fourth Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$31.60
Supplemental Benefit Rate per Hour: \$24.02

(District Council of Painters)

PAINTER - STRUCTURAL STEEL

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

Painters - Structural Steel (First Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 40% of Journeyman's rate

Painters - Structural Steel (Second Year)

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 60% of Journeyman's rate

Painters - Structural Steel (Third Year)

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 80% of Journeyman's rate

(Local #806)

PLASTERER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

Plasterer - First Year: 1st Six Months

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 40% of Journeyman's rate

Supplemental Rate Per Hour: \$15.76

Plasterer - First Year: 2nd Six Months

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 45% of Journeyman's rate

Supplemental Rate Per Hour: \$16.24

Plasterer - Second Year: 1st Six Months

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 55% of Journeyman's rate

Supplemental Rate Per Hour: \$18.21

Plasterer - Second Year: 2nd Six Months

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 60% of Journeyman's rate

Supplemental Rate Per Hour: \$19.29

Plasterer - Third Year: 1st Six Months

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 70% of Journeyman's rate

Supplemental Rate Per Hour: \$21.46

Plasterer - Third Year: 2nd Six Months

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 75% of Journeyman's rate

Supplemental Rate Per Hour: \$22.54

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§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

(Local #530)

PLUMBER

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 3)

Plumber - First Year: 1st Six Months

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$14.00

Supplemental Benefit Rate per Hour: \$0.71

Plumber - First Year: 2nd Six Months

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$14.00

Supplemental Benefit Rate per Hour: \$2.96

Plumber - Second Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$23.87

Supplemental Benefit Rate per Hour: \$11.46

Plumber - Third Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$25.97

Supplemental Benefit Rate per Hour: \$11.46

Plumber - Fourth Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$28.82

Supplemental Benefit Rate per Hour: \$11.46

Plumber - Fifth Year: 1st Six Months

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$30.22

Supplemental Benefit Rate per Hour: \$11.46

Plumber - Fifth Year: 2nd Six Months

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§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$42.29

Supplemental Benefit Rate per Hour: \$11.46

(Plumbers Local #1)

**POINTER - WATERPROOFER, CAULKER MECHANIC (EXTERIOR BUILDING
RENOVATION)**

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Pointer - Waterproofer, Caulker Mechanic - First Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$25.01

Supplemental Benefit Rate per Hour: \$4.75

Pointer - Waterproofer, Caulker Mechanic - Second Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$27.25

Supplemental Benefit Rate per Hour: \$9.70

Pointer - Waterproofer, Caulker Mechanic - Third Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$32.24

Supplemental Benefit Rate per Hour: \$12.45

Pointer - Waterproofer, Caulker Mechanic - Fourth Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$38.66

Supplemental Benefit Rate per Hour: \$12.45

(Bricklayer District Council)

ROOFER

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 2)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Roofer - First Year

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 35% of Journeyman's Rate

Roofer - Second Year

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 50% of Journeyman's Rate

Roofer - Third Year

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 60% of Journeyman's Rate

Roofer - Fourth Year

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 75% of Journeyman's Rate

(Local #8)

SHEET METAL WORKER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

Sheet Metal Worker (0-6 Months)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 25% of Journeyman's rate

Supplemental Rate Per Hour: \$6.15

Sheet Metal Worker (7-18 Months)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 35% of Journeyman's rate

Supplemental Rate Per Hour: \$16.21

Sheet Metal Worker (19-30 Months)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 45% of Journeyman's rate

Supplemental Rate Per Hour: \$22.23

Sheet Metal Worker (31-36 Months)

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Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 55% of Journeyman's rate
Supplemental Rate Per Hour: \$26.16

Sheet Metal Worker (37-42 Months)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 60% of Journeyman's rate
Supplemental Rate Per Hour: \$28.13

Sheet Metal Worker (43-48 Months)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 70% of Journeyman's rate
Supplemental Rate Per Hour: \$32.09

Sheet Metal Worker (49-54 Months)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 75% of Journeyman's rate
Supplemental Rate Per Hour: \$34.07

Sheet Metal Worker (55-60 Months)

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 80% of Journeyman's rate
Supplemental Rate Per Hour: \$36.03

(Local #28)

SIGN ERECTOR

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

Sign Erector - First Year: 1st Six Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 35% of Journeyman's rate
Supplemental Rate Per Hour: \$5.96

Sign Erector - First Year: 2nd Six Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 40% of Journeyman's rate
Supplemental Rate Per Hour: \$6.75

Sign Erector - Second Year: 1st Six Months

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§220 APPRENTICESHIP PREVAILING WAGE SCHEDULE

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 45% of Journeyperson's rate
Supplemental Rate Per Hour: \$7.55

Sign Erector - Second Year: 2nd Six Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: \$8.34

Sign Erector - Third Year: 1st Six Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 55% of Journeyperson's rate
Supplemental Rate Per Hour: \$9.13

Sign Erector - Third Year: 2nd Six Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: \$9.92

Sign Erector - Fourth Year: 1st Six Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Rate Per Hour: \$10.72

Sign Erector - Fourth Year: 2nd Six Months

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Rate Per Hour: \$11.51

Sign Erector - Fifth Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Rate Per Hour: \$12.30

Sign Erector - Sixth Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: \$12.30

(Local #137)

TEAMFITTER

(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 3)

Steamfitter - First Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate and Supplemental Per Hour: 40% of Journeyman's rate

Steamfitter - Second Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate and Supplemental Rate Per Hour: 50% of Journeyman's rate.

Steamfitter - Third Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate and Supplemental Rate per Hour: 65% of Journeyman's rate.

Steamfitter - Fourth Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate and Supplemental Rate Per Hour: 80% of Journeyman's rate.

Steamfitter - Fifth Year

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate and Supplemental Rate Per Hour: 85% of Journeyman's rate.

(Local #638)

STONE MASON - SETTER

(Ratio Apprentice of Journeyman: 1 to 1, 1 to 2)

Stone Mason - Setters - First 750 Hours

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 50% of Journeyman's rate

Stone Mason - Setters - Second 750 Hours

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 60% of Journeyman's rate

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Supplemental Rate Per Hour: 50% of Journeyperson's rate

Stone Mason - Setters - Third 750 Hours

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 70% of Journeyperson's rate

Supplemental Rate Per Hour: 50% of Journeyperson's rate

Stone Mason - Setters - Fourth 750 Hours

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 80% of Journeyperson's rate

Supplemental Rate Per Hour: 50% of Journeyperson's rate

Stone Mason - Setters - Fifth 750 Hours

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 90% of Journeyperson's rate

Supplemental Rate Per Hour: 50% of Journeyperson's rate

Stone Mason - Setters - Sixth 750 Hours

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate Per Hour: 100% of Journeyperson's rate

Supplemental Rate Per Hour: 50% of Journeyperson's rate

(Bricklayers District Council)

TAPER

(Ratio of Apprentice to Journeyperson: 1 to 1, 1 to 4)

Drywall Taper - First Year

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 40% of Journeyperson's rate

Drywall Taper - Second Year

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 60% of Journeyperson's rate

Drywall Taper - Third Year

Effective Period: 7/1/2014 - 6/30/2015

Wage and Supplemental Rate Per Hour: 80% of Journeyperson's rate

Local #1974)

TILE LAYER - SETTER
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 4)

Tile Layer - Setter - First 750 Hours

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 50% of Journeyman's rate

Tile Layer - Setter - Second 750 Hours

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 55% of Journeyman's rate

Tile Layer - Setter - Third 750 Hours

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 65% of Journeyman's rate

Tile Layer - Setter - Fourth 750 Hours

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 75% of Journeyman's rate

Tile Layer - Setter - Fifth 750 Hours

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 85% of Journeyman's rate

Tile Layer - Setter - Sixth 750 Hours

Effective Period: 7/1/2014 - 6/30/2015
Wage and Supplemental Rate Per Hour: 95% of Journeyman's rate

(Local #7)

TIMBERPERSON
(Ratio of Apprentice to Journeyman: 1 to 1, 1 to 6)

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Timberperson - First Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 40% of Journeyperson's rate
Supplemental Rate Per Hour: \$30.89

Timberperson - Second Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: \$30.89

Timberperson - Third Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Rate Per Hour: \$30.89

Timberperson - Fourth Year

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: \$30.89

(Local #1536)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§230 PREVAILING WAGE SCHEDULE

LABOR LAW §230 AND
NYC ADMINISTRATIVE CODE §6-130 BUILDING SERVICE EMPLOYEES

PREVAILING WAGE FOR BUILDING SERVICE EMPLOYEES ON NYC CONTRACTS PURSUANT
TO LABOR LAW §230 ET SEQ.

Building service employees on public contracts must receive not less than the prevailing rate of wage and supplements for the classification of work performed. In accordance with Labor Law §230 et seq. the Comptroller of the City of New York has promulgated this schedule of prevailing wages and supplemental benefits for building service employees engaged on New York City public building service contracts in excess of \$1,500.00. Prevailing rates are required to be annexed to and form part of the contract pursuant to §231 (4).

This schedule is a compilation of separate determinations of the prevailing rate of wage and supplements made by the Comptroller for each trade classification listed herein pursuant to New York State Labor Law section 234 (1). The source of the wage and supplement rates, whether a collective bargaining agreement, survey data or other, is listed at the end of each classification.

Agency Chief Contracting Officers should contact the Bureau of Labor Law's Classification Unit with any questions concerning trade classifications, prevailing rates or prevailing practices with respect to procurement on New York City building services contracts. Contractors are advised to review the Comptroller's Prevailing Wage Schedule before bidding on building services contracts. Contractors with questions concerning trade classifications, prevailing rates or prevailing practices with respect to building services contracts in the procurement stage must contact the contracting agency responsible for the procurement.

Any error as to compensation under the prevailing wage law or other information as to trade classification, made by the contracting agency in the contract documents or in any other communication, will not preclude a finding against the contractor of prevailing wage violation.

Any questions concerning trade classifications, prevailing rates or prevailing practices on New York City building services contracts that have already been awarded may be directed to the Bureau of Labor Law's Classification Unit by calling (212) 669-7974. All callers must have the agency name and contract registration number available when calling with questions on building services contracts. Please direct all other compliance issues to: Bureau of Labor Law, Attn: Wasyi Kinach, P.E., Office of the Comptroller, 1 Centre Street, Room 1122, New York, N.Y. 10007; Fax (212) 669-4002.

PREVAILING WAGE FOR BUILDING SERVICE EMPLOYEES IN NEW YORK CITY LEASED OR
FINANCIALLY ASSISTED FACILITIES PURSUANT TO NYC ADMINISTRATIVE CODE § 6-130

Covered landlords & covered financial assistance recipients shall ensure that all building service employees performing building service work at the premises to which a lease or financial assistance pertains are paid no less than the prevailing wage listed in the Labor Law §230 Prevailing Wage Schedule.

Covered Landlords include:

Businesses (other than not-for-profit organizations) leasing to New York City agencies

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§230 PREVAILING WAGE SCHEDULE

commercial office space or commercial office facilities of 10,000 square feet or more where the City leases or rents no less than 51% of the total square footage of the building to which the lease applies (no less than 80% in Staten Island or in an area not defined as an exclusion area pursuant to section 421-a of the real property tax law on the date of enactment of the local law).

Covered Financial Assistance Recipients include:

Businesses (other than not-for-profit organizations) with annual gross revenues of five million dollars or more who have received financial assistance from the City of New York (as defined in New York City Administrative Code §6-130) with a total value of one million dollars or more.

Exemptions: Business Improvement Districts and employers with manufacturing operations at the premises to which the financial assistance pertains.

The information is intended to assist you in meeting your prevailing wage obligation. You should consult New York City Administrative Code §6-130 to determine whether you are covered by this prevailing wage law. New York City Administrative Code § 6-130 requires the City to maintain an updated list of covered landlords and financial assistance recipients who are subject to the prevailing wage requirement.

Labor Law § 231 (6) and NYC Administrative Law §6-130 requires contractors to post on the site of the work a current copy of this schedule of wages and supplements.

This schedule is applicable to work performed during the effective period, unless otherwise noted. Changes to this schedule are published on our web site www.comptroller.nyc.gov. Contractors must pay the wages and supplements in effect when the building service employee performs the work. Preliminary schedules for future one-year periods appear in the City Record on or about June 1 each succeeding year. Final schedules appear on or about July 1 in the City Record and on our web site www.comptroller.nyc.gov.

Contractors are solely responsible for maintaining original payroll records delineating, among other things, the hours worked by each employee within a given classification.

Some of the rates in this schedule are based on collective bargaining agreements. The Comptroller's Office has attempted to include all overtime, shift and night differential, Holiday, Saturday, Sunday or other premium time work. However, this schedule does not set forth every prevailing practice with respect to such rates with which employers must comply. All such practices are nevertheless part of the employer's prevailing wage obligation and contained in the collective bargaining agreements of the prevailing wage unions. These collective bargaining agreements are available for inspection by appointment. Requests for appointments may be made by calling (212) 669-4443, Monday through Friday between the hours of 9 a.m. and 5 p.m.

In order to meet their obligation to provide prevailing supplemental benefits to each covered employee, employers must either:

- 1) Provide bona-fide benefits which cost the employer no less than the prevailing supplemental benefits rate; or
- 2) Supplement the employee's hourly wage by an amount no less than the prevailing supplemental benefits rate; or
- 3) Provide a combination of bona-fide benefits and wage supplements which cost the employer no less than the prevailing supplemental benefits rate in total.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§230 PREVAILING WAGE SCHEDULE

Particular attention should be given to the supplemental benefits requirement. Although in most instances the payment or provision for supplemental benefits is for each hour worked, some classifications require the payment or provision of supplemental benefits for each hour paid. Consequently, some prevailing practices require benefits to be purchased at the overtime, shift differential, Holiday, Saturday, Sunday or other premium time rate.

Benefits are paid for EACH HOUR WORKED unless otherwise noted.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§230 PREVAILING WAGE SCHEDULE



THE CITY OF NEW YORK
OFFICE OF THE COMPTROLLER
BUREAU OF LABOR LAW
1 CENTRE STREET
NEW YORK, NY 10007

SCOTT M. STRINGER
COMPTROLLER

If you are a Covered Building Service Employee and you have been paid less than the Prevailing Wage and Benefits, please contact us at 212-669-4443 or download our complaint form from our website at WWW.COMPTROLLER.NYC.GOV (click on the Bureau of Labor Law).

Si es un empleado de servicios a edificios elegible y recibió menos del sueldo prevalente y beneficios, por favor contáctenos en 212-669-4443 o descarga un formulario de reclamo del sitio del Internet WWW.COMPTROLLER.NYC.GOV (oprime "Oficina de Derecho Laboral").

Wasył Kinach, P.E.
Director of Classifications
Bureau of Labor Law

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BOILER SERVICEPERSON/TANK CLEANER MECHANIC (LOW PRESSURE)

Boiler Service Person/Tank Cleaner Mechanic (Low Pressure)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$11.00

Supplemental Benefit Rate per Hour: \$7.15

Overtime Description

Work in excess of 8 hours performed on a Sunday or Holiday shall be paid two and one half times the regular rate.

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Double time the regular rate for work on the following holiday(s).

Paid Holidays

New Year's Day
Martin Luther King Jr. Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day
Employee's Birthday

Vacation

1 year service.....five (5) days
3 years service or more.....ten (10) days
8 years service or more.....fifteen (15) days
13 years service or more.....twenty (20) days

SICK LEAVE:

1-2 years employment.....4 days
2-3 years employment.....5 days
3-4 years employment.....6 days
4-5 years employment.....8 days
6 years or more employment.....10 days

(Local #32 B/J)

BUILDING CLEANER AND MAINTAINER (OFFICE)

Office Building Class "A" Handyperson (Over 280,000 square feet gross area)

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$25.65

Supplemental Benefit Rate per Hour: \$9.91

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$26.20

Supplemental Benefit Rate per Hour: \$10.46

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Office Building Class "A" Foreperson, Starter (Over 280,000 square feet gross area)

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$25.54

Supplemental Benefit Rate per Hour: \$9.91

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$26.09

Supplemental Benefit Rate per Hour: \$10.46

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Office Building Class "A" Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director (Over 280,000 square feet gross area)

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$23.42

Supplemental Benefit Rate per Hour: \$9.91

Supplemental Note: for new employee 0-3 months of employment - \$0.00; for new employee 4-12 months of employment - \$7.22; for new employee 13-24 months of employment - \$9.58

NEW HIRE: Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director may be paid 75% of the wage rate above for the first 21 months of employment, 85% of the wage rate above for the 22nd through 42nd months of employment, and upon the completion of 42 months of employment employee shall be paid the full wage rate. Note: New Hires hired before January 1, 2012 will continue to receive 80% of the wage rate above for the first 30 months, and upon the completion of 30 months of employment employee shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$23.92

Supplemental Benefit Rate per Hour: \$10.46

Supplemental Note: for new employee 0-3 months of employment - \$0.00; for new employee 4-12 months of employment - \$7.67; for new employee 13-24 months of employment - \$10.13

NEW HIRE: Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director may be paid 75% of the wage rate above for the first 21 months of employment, 85% of the wage rate above for the 22nd through 42nd months of employment, and upon the completion of 42 months of employment employee shall be paid the full wage rate.

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§230 PREVAILING WAGE SCHEDULE

Note: New Hires hired before January 1, 2012 will continue to receive 80% of the wage rate above for the first 30 months, and upon the completion of 30 months of employment employee shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Office Building Class "B" Handyperson (Over 120,000 and less than 280,000 square feet gross area)

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$25.62

Supplemental Benefit Rate per Hour: \$9.91

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$26.17

Supplemental Benefit Rate per Hour: \$10.46

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Office Building Class "B" Foreperson, Starter (Over 120,000 and less than 280,000 square feet gross area)

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$25.50

Supplemental Benefit Rate per Hour: \$9.91

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$26.05

Supplemental Benefit Rate per Hour: \$10.46

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Office Building Class "B" Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director (Over 120,000 and less than 280,000 square feet gross area)

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$23.39

Supplemental Benefit Rate per Hour: \$9.91

Supplemental Note: for new employee 0-3 months of employment - \$0.00; for new employee 4-12 months of employment - \$7.22; for new employee 13-24 months of employment - \$9.58

NEW HIRE: Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director may be paid 75% of the wage rate above for the first 21 months of employment, 85% of the wage rate above for the 22nd through 42nd months of employment, and upon the completion of 42 months of employment employee shall be paid the full wage rate. Note: New Hires hired before January 1, 2012 will continue to receive 80% of the wage rate above for the first 30 months, and upon the completion of 30 months of employment employee shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$23.89

Supplemental Benefit Rate per Hour: \$10.46

Supplemental Note: for new employee 0-3 months of employment - \$0.00; for new employee 4-12 months of employment - \$7.67; for new employee 13-24 months of employment - \$10.13

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NEW HIRE: Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director may be paid 75% of the wage rate above for the first 21 months of employment, 85% of the wage rate above for the 22nd through 42nd months of employment, and upon the completion of 42 months of employment employee shall be paid the full wage rate. Note: New Hires hired before January 1, 2012 will continue to receive 80% of the wage rate above for the first 30 months, and upon the completion of 30 months of employment employee shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Office Building Class "C" Handyperson (Less than 120,000 square feet gross area)

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$25.57

Supplemental Benefit Rate per Hour: \$9.91

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$26.12

Supplemental Benefit Rate per Hour: \$10.46

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Office Building Class "C" Foreperson, Starter (Less than 120,000 square feet gross area)

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$25.46

Supplemental Benefit Rate per Hour: \$9.91

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$26.01

Supplemental Benefit Rate per Hour: \$10.46

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Office Building Class "C" Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director (Less than 120,000 square feet gross area)

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$23.35

Supplemental Benefit Rate per Hour: \$9.91

Supplemental Note: for new employee 0-3 months of employment - \$0.00; for new employee 4-12 months of employment - \$7.22; for new employee 13-24 months of employment - \$9.58

NEW HIRE: Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director may be paid 75% of the wage rate above for the first 21 months of employment, 85% of the wage rate above for the 22nd through 42nd months of employment, and upon the completion of 42 months of employment employee shall be paid the full wage rate. Note: New Hires hired before January 1, 2012 will continue to receive 80% of the wage rate above for the first 30 months, and upon the completion of 30 months of employment employee shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Effective Period: 1/1/2015 - 6/30/2015

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
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Wage Rate per Hour: \$23.85

Supplemental Benefit Rate per Hour: \$10.46

Supplemental Note: for new employee 0-3 months of employment - \$0.00; for new employee 4-12 months of employment - \$7.67; for new employee 13-24 months of employment - \$10.13

NEW HIRE: Cleaner/Porter, Elevator Operator, Exterminator, Fire Safety Director may be paid 75% of the wage rate above for the first 21 months of employment, 85% of the wage rate above for the 22nd through 42nd months of employment, and upon the completion of 42 months of employment employee shall be paid the full wage rate. Note: New Hires hired before January 1, 2012 will continue to receive 80% of the wage rate above for the first 30 months, and upon the completion of 30 months of employment employee shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Months of employment shall be defined as an Employee's length of service with the Employer or at the Facility, whichever is greater.

Overtime Description

Supplemental Benefits shall be paid for each hour paid, up to forty (40) paid hours per week.

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for work on a holiday plus the day's pay.

Time and one half the regular hourly rate after 40 hours in any work week.

Paid Holidays

New Year's Day

President's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Vacation

Less than 6 months of work.....no vacation

6 months of work.....three (3) days

1 year of work.....ten (10) days

5 years of work.....fifteen (15) days

15 years of work.....twenty (20) days

21 years of work.....twenty-one (21) days

22 years of work.....twenty-two (22) days

23 years of work.....twenty-three (23) days

24 years of work.....twenty-four (24) days

25 years or more of work.....twenty-five (25) days

Plus two Personal Days per year.

Sick Leave:

10 sick days per year.

Unused sick leave paid in the succeeding January, one full day pay for each unused sick day.

(Local #32 B/J)

BUILDING CLEANER AND MAINTAINER (RESIDENTIAL)

Residential Building Handyperson

Effective Period: 7/1/2014 - 4/20/2015

Wage Rate per Hour: \$24.26

Supplemental Benefit Rate per Hour: \$9.83

Supplemental Note: for new employee 0-3 months of employment - \$0.00. Effective 1/1/2015 - \$10.38

Effective Period: 4/21/2015 - 6/30/2015

Wage Rate per Hour: \$24.83

Supplemental Benefit Rate per Hour: \$10.38

Supplemental Note: for new employee 0-3 months of employment - \$0.00

Residential Building Cleaner/Porter, Doorperson, Elevator Operator

Effective Period: 7/1/2014 - 4/20/2015

Wage Rate per Hour: \$21.98

Supplemental Benefit Rate per Hour: \$9.83

Supplemental Note: for new employee 0-3 months of employment - \$0.00; for new employee 4-12 months of employment - \$7.22; for new employee 13-24 months of employment - \$9.58

Effective 1/1/2015 - \$10.38, for new employee 0-3 months of employment - \$0.00; for new employee 4-12 months of employment - \$7.67; for new employee 13-24 months of employment - \$10.13

NEW HIRE - Cleaner/Porter, Doorperson, Elevator Operator: may be paid a starting rate of 80% of the hourly rate published above. Upon completion of 30 months of employment, the new hire shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Effective Period: 4/21/2015 - 6/30/2015

Wage Rate per Hour: \$22.51

Supplemental Benefit Rate per Hour: \$10.38

Supplemental Note: for new employee 0-3 months of employment - \$0.00; for new employee 4-12 months of employment - \$7.67; for new employee 13-24 months of employment - \$10.13

NEW HIRE - Cleaner/Porter, Doorperson, Elevator Operator: 0-21 months may be paid 75% of the hourly wage rate published above, 22-42 months may be paid 85% of the hourly wage rate published above. Upon completion of 42 months of employment, the new hire shall be paid the full wage rate. Upon completion of two years of employment the new hire receives the full supplemental benefit rate.

Overtime Description

Supplemental Benefits shall be paid for each hour paid, up to forty (40) paid hours per week.

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for work on a holiday plus the day's pay.

Time and one half the regular hourly rate after 40 hours in any work week.

Paid Holidays

New Year's Day

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Martin Luther King Jr. Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Election Day
Thanksgiving Day
Christmas Day

Vacation

6 months.....three (3) days
1 year.....ten (10) days
5 years.....fifteen (15) days
15 years.....twenty (20) days
21 years.....twenty-one (21) days
22 years.....twenty-two (22) days
23 years.....twenty-three (23) days
24 years.....twenty-four (24) days
25 years.....twenty-five (25) days
Plus two Personal Days per year.

SICK LEAVE

After 1 year of service.....ten (10) days per year

(Local #32 B/J)

BUILDING HVAC SERVICES OPERATOR

Engineer (Refrigeration)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: **\$36.73**

Supplemental Benefit Rate per Hour: **\$16.35**

Fireperson

Fireperson (Helper): Assist the Engineer

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: **\$28.60**

Supplemental Benefit Rate per Hour: **\$15.97**

Please note that the NYC Comptroller's Office does not publish rates for the Stationary Engineer title.

Overtime Description

All hours worked on a holiday shall be paid at two and one half times the regular wage rate in lieu of the paid day off.

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§230 PREVAILING WAGE SCHEDULE

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Time and one half the regular rate for Sunday.

Paid Holidays

New Year's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day
Plus six (6) floating Holidays

Vacation

6 months three (3) days
1 year ten (10) days
5 years fifteen (15) days
15 years twenty (20) days
21 years twenty-one (21) days
22 years twenty-two (22) days
23 years twenty-three (23) days
24 years twenty-four (24) days
25 years twenty-five (25) days

(Local #94)

CLEANER (PARKING GARAGE)

Garage Cleaner

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$10.76
Supplemental Benefit Rate per Hour: \$1.63

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular hourly rate after 40 hours in any work week.

(Based on data from NYS Department of Labor Occupational Employment Statistics and US Department of Labor Bureau of Labor Statistics)

FUEL OIL

Fuel Oil, Coal, Fuel Gas, Petroleum Product Chauffeur (5th Year and above)

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
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Effective Period: 7/1/2014 - 12/15/2014
Wage Rate per Hour: \$31.36
Supplemental Benefit Rate per Hour: \$20.77

Effective Period: 12/16/2014 - 6/30/2015
Wage Rate per Hour: \$31.86
Supplemental Benefit Rate per Hour: \$21.27

Fuel Oil, Coal, Fuel Gas, Petroleum Product Chauffeur (4th Year)

Effective Period: 7/1/2014 - 12/15/2014
Wage Rate per Hour: \$28.75
Supplemental Benefit Rate per Hour: \$20.77

Effective Period: 12/16/2014 - 6/30/2015
Wage Rate per Hour: \$29.25
Supplemental Benefit Rate per Hour: \$21.27

Fuel Oil, Coal, Fuel Gas, Petroleum Product Chauffeur (3rd Year)

Effective Period: 7/1/2014 - 12/15/2014
Wage Rate per Hour: \$26.75
Supplemental Benefit Rate per Hour: \$20.77

Effective Period: 12/16/2014 - 6/30/2015
Wage Rate per Hour: \$27.25
Supplemental Benefit Rate per Hour: \$21.27

Fuel Oil, Coal, Fuel Gas, Petroleum Product Chauffeur (2nd Year)

Effective Period: 7/1/2014 - 12/15/2014
Wage Rate per Hour: \$24.75
Supplemental Benefit Rate per Hour: \$20.77

Effective Period: 12/16/2014 - 6/30/2015
Wage Rate per Hour: \$25.25
Supplemental Benefit Rate per Hour: \$21.27

Fuel Oil, Coal, Fuel Gas, Petroleum Product Chauffeur (1st Year)

Effective Period: 7/1/2014 - 12/15/2014
Wage Rate per Hour: \$22.75
Supplemental Benefit Rate per Hour: \$20.77

Effective Period: 12/16/2014 - 6/30/2015
Wage Rate per Hour: \$23.25
Supplemental Benefit Rate per Hour: \$21.27

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays

Double time the regular rate for work on the following holiday(s).

- Martin Luther King Jr. Day
- Lincoln's Birthday
- Washington's Birthday
- Memorial Day
- Independence Day
- Labor Day
- Columbus Day
- Election Day
- Veteran's Day

Triple time the regular rate for work on the following holiday(s).

- New Year's Day
- Thanksgiving Day
- Christmas Day

Paid Holidays

- New Year's Day
- Martin Luther King Jr. Day
- Lincoln's Birthday
- Washington's Birthday
- Memorial Day
- Independence Day
- Labor Day
- Columbus Day
- Election Day
- Veteran's Day
- Thanksgiving Day
- Christmas Day

Vacation

Less than 75 days worked.....no vacation.
75 days worked, but less than 110 days worked in a calendar year.....five (5) days the following year.
110 days or more worked in a calendar year.....ten (10) days the following year.

SICK LEAVE:

1 day sick leave earned for each 40 days worked in the preceding calendar year for a maximum of five (5) days per calendar year.

(Local #553)

GARDENER

Gardener

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
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Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$17.57
Supplemental Benefit Rate per Hour: \$1.63

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular hourly rate after 40 hours in any work week.

(Based on data from NYS Department of Labor Occupational Employment Statistics and US Department of Labor Bureau of Labor Statistics)

LOCKSMITH

Locksmith

Effective Period: 7/1/2014 - 6/30/2015
Wage Rate per Hour: \$22.28
Supplemental Benefit Rate per Hour: \$6.13

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular hourly rate after 40 hours in any work week.

(Based on data from NYS Department of Labor Occupational Employment Statistics and US Department of Labor Bureau of Labor Statistics)

MEDICAL WASTE REMOVAL

Driver

Effective Period: 7/1/2014 - 3/31/2015
Wage Rate per Hour: \$18.76
Supplemental Benefit Rate per Hour: \$9.47

Effective Period: 4/1/2015 - 6/30/2015
Wage Rate per Hour: \$19.59
Supplemental Benefit Rate per Hour: \$10.34

Helper

Effective Period: 7/1/2014 - 3/31/2015
Wage Rate per Hour: \$15.01
Supplemental Benefit Rate per Hour: \$9.47

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Effective Period: 4/1/2015 - 6/30/2015
Wage Rate per Hour: \$15.84
Supplemental Benefit Rate per Hour: \$10.34

Tractor Trailer Driver

Effective Period: 7/1/2014 - 3/31/2015
Wage Rate per Hour: \$21.26
Supplemental Benefit Rate per Hour: \$9.47

Effective Period: 4/1/2015 - 6/30/2015
Wage Rate per Hour: \$22.09
Supplemental Benefit Rate per Hour: \$10.34

Overtime Description

Time and one half the regular hourly rate after an 8 hour day or after 40 hours in any work week. The seventh day of work in a workweek is paid at double time the regular hourly rate. Time and one half the regular hourly rate for work on a holiday plus days pay for below paid holidays.

Paid Holidays

- President's Day
- Memorial Day
- Independence Day
- Labor Day
- Thanksgiving Day
- Christmas Day

Vacation

1 year of service but less than five years.....	ten (10) days
5 years of service but less than ten years.....	fifteen (15) days
10 years of service.....	sixteen (16) days
11 years.....	seventeen (17) days
12 years.....	eighteen (18) days
13 years.....	nineteen (19) days
14 years.....	twenty (20) days
20 years.....	twenty-one (21) days
21 years.....	twenty-two (22) days
22 years.....	twenty-three (23) days
23 years.....	twenty-four (24) days
24 years.....	twenty-five (25) days
Plus 5 Personal Days	

(Local #813)

MOVER - OFFICE FURNITURE AND EQUIPMENT

Heavy and Tractor Trailer Truck Driver

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§230 PREVAILING WAGE SCHEDULE

Tractor-trailer combination or a truck with a capacity of at least 26,000 pounds Gross Vehicle Weight (GVW)

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$22.48

Supplemental Benefit Rate per Hour: \$5.13

Light Truck Driver

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$18.89

Supplemental Benefit Rate per Hour: \$5.13

Laborer and Freight, Stock, and Material Movers, Hand

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$17.59

Supplemental Benefit Rate per Hour: \$5.13

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular hourly rate after 40 hours in any work week.

(Based on data from NYS Department of Labor Occupational Employment Statistics and US Department of Labor Bureau of Labor Statistics)

REFUSE REMOVER

Refuse Remover

Effective Period: 7/1/2014 - 6/30/2015

Wage Rate per Hour: \$29.54

Supplemental Benefit Rate per Hour: \$5.13

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular hourly rate after 40 hours in any work week.

(Based on data from NYS Department of Labor Occupational Employment Statistics and US Department of Labor Bureau of Labor Statistics)

SECURITY GUARD (ARMED)

Security Guard (Armed)

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$28.25

Supplemental Benefit Rate per Hour: \$5.02

Supplemental Note: for new employee 0-30 days of employment - \$4.44; for new employee 31-120 days of employment - \$4.61; for new employee 121 days - 2 years of employment - \$4.63

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$28.50

Supplemental Benefit Rate per Hour: \$5.34

Supplemental Note: for new employee 0-30 days of employment - \$4.62; for new employee 31-120 days of employment - \$4.79; for new employee 121 days - 2 years of employment - \$4.90

Months of employment shall be defined as an Employee's length of service with the Employer or at the Facility, whichever is greater.

Overtime Description

A guard who works a holiday is paid the regular rate plus receives the paid holiday.

Supplemental Benefits shall be paid for each hour paid, up to forty (40) paid hours per week.

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular hourly rate after 40 hours in any work week.

Paid Holidays

New Year's Day

President's Day

Memorial Day

Independence Day

Labor Day

Thanksgiving Day

Christmas Day

Personal Day

Vacation

Months on payroll	Vacation with Pay
6	3 days
12	5 days
24	10 days
60	15 days
180	20 days
300	25 days

Sick Leave

Employees accrue paid sick leave at the rate of one (1) sick day for every six (6) months worked, up to a maximum of six (6) days a year.

(Local #32B/J)

SECURITY GUARD (UNARMED)

Security Guard (Unarmed) 0 - 6 months

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$13.10

Supplemental Benefit Rate per Hour: \$4.63

Supplemental Note: for new employee 0-30 days of employment - \$4.44; for new employee 31-120 days of employment - \$4.61

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$13.35

Supplemental Benefit Rate per Hour: \$4.90

Supplemental Note: for new employee 0-30 days of employment - \$4.62; for new employee 31-120 days of employment - \$4.79

Security Guard (Unarmed) 7 - 12 months

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$13.60

Supplemental Benefit Rate per Hour: \$4.63

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$13.85

Supplemental Benefit Rate per Hour: \$4.90

Security Guard (Unarmed) 13 - 18 months

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$14.10

Supplemental Benefit Rate per Hour: \$4.63

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$14.35

Supplemental Benefit Rate per Hour: \$4.90

Security Guard (Unarmed) 19 - 24 months

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$14.60

Supplemental Benefit Rate per Hour: \$4.63

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$14.85

Supplemental Benefit Rate per Hour: \$4.90

Security Guard (Unarmed) 25 - 30 months

Effective Period: 7/1/2014 - 12/31/2014

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Wage Rate per Hour: \$15.10
Supplemental Benefit Rate per Hour: \$5.02

Effective Period: 1/1/2015 - 6/30/2015
Wage Rate per Hour: \$15.35
Supplemental Benefit Rate per Hour: \$5.34

Security Guard (Unarmed) 31 months or more

Effective Period: 7/1/2014 - 12/31/2014
Wage Rate per Hour: \$15.60
Supplemental Benefit Rate per Hour: \$5.02

Effective Period: 1/1/2015 - 6/30/2015
Wage Rate per Hour: \$16.00
Supplemental Benefit Rate per Hour: \$5.34

Months of employment shall be defined as an Employee's length of service with the Employer or at the Facility, whichever is greater.

Overtime Description

A guard who works a holiday is paid the regular rate plus receives the paid holiday.
Supplemental Benefits shall be paid for each hour paid, up to forty (40) paid hours per week.

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular hourly rate after 40 hours in any work week.

Paid Holidays

New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day
Personal Day

Vacation

Months on payroll	Vacation with Pay
6	3 days
12	5 days
24	10 days
60	15 days
180	20 days
300	25 days

Sick Leave

Employees accrue paid sick leave at the rate of one (1) sick day for every six (6) months worked, up to a maximum of six (6) days a year.

(Local #32B/J)

WINDOW CLEANER

Window Cleaner

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$26.90

Supplemental Benefit Rate per Hour: \$9.91

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$27.40

Supplemental Benefit Rate per Hour: \$10.46

Power Operated Scaffolds, Manual Scaffolds, and Boatswain Chairs

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$29.27

Supplemental Benefit Rate per Hour: \$9.91

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$29.90

Supplemental Benefit Rate per Hour: \$10.46

Window Cleaner Apprentice (0 - 3 months)

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$19.92

Supplemental Benefit Rate per Hour: None

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$20.29

Supplemental Benefit Rate per Hour: None

Window Cleaner Apprentice (4 - 7 months)

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$21.54

Supplemental Benefit Rate per Hour: \$9.91

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$21.94

Supplemental Benefit Rate per Hour: \$10.46

Window Cleaner Apprentice (8 - 11 months)

Effective Period: 7/1/2014 - 12/31/2014

OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§230 PREVAILING WAGE SCHEDULE

Wage Rate per Hour: \$22.82

Supplemental Benefit Rate per Hour: \$9.91

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$23.24

Supplemental Benefit Rate per Hour: \$10.46

Window Cleaner Apprentice (12 - 15 months)

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$24.12

Supplemental Benefit Rate per Hour: \$9.91

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$24.57

Supplemental Benefit Rate per Hour: \$10.46

Window Cleaner Apprentice (16 - 17 months)

Effective Period: 7/1/2014 - 12/31/2014

Wage Rate per Hour: \$25.44

Supplemental Benefit Rate per Hour: \$9.91

Effective Period: 1/1/2015 - 6/30/2015

Wage Rate per Hour: \$25.91

Supplemental Benefit Rate per Hour: \$10.46

Months of employment shall be defined as an Employee's length of service with the Employer or at the Facility, whichever is greater.

Overtime

Time and one half the regular rate after an 8 hour day.

Time and one half the regular rate for Saturday.

Double time the regular rate for Sunday.

Time and one half the regular rate for work on a holiday plus the day's pay.

Paid Holidays

New Year's Day

Martin Luther King Jr. Day

President's Day

Good Friday

Memorial Day

Independence Day

Labor Day

Columbus Day

Thanksgiving Day

Day after Thanksgiving

Christmas Day

Personal Day

Vacation

PUBLISH DATE: 7/1/2014

EFFECTIVE PERIOD: JULY 1, 2014 THROUGH JUNE 30, 2015

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OFFICE OF THE COMPTROLLER, CITY OF NEW YORK
§230 PREVAILING WAGE SCHEDULE

After 7 months but less than 1 year of service.....	five (5) days
1 year but less than 5 years of service.....	ten (10) days
5 years of service but less than 15 years of service.....	fifteen (15) days
15 years of service but less than 21 years of service.....	twenty (20) days
21 years.....	twenty-one (21) days
22 years.....	twenty-two (22) days
23 years.....	twenty-three (23) days
24 years.....	twenty-four (24) days
25 years or more of service.....	twenty-five (25) days
Plus 1 day per year for medical visit	

SICK LEAVE:

10 days after one year worked. Unused sick days to be paid in cash.

(Local #32 B/J)

Issue Date - January 15, 2015



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

**DDC STANDARD GENERAL CONDITIONS
FOR MULTIPLE CONTRACT PROJECTS**



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Issue Date - January 15, 2015

NO TEXT



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Issue Date - January 15, 2015

**DIVISION 01 – DDC STANDARD GENERAL CONDITIONS
MULTIPLE CONTRACT PROJECTS**

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NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Issue Date - January 15, 2015

NO TEXT



SECTION 01 10 00
SUMMARY

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].
- B. Addendum to the General Conditions: These General Conditions include and are supplemented by the Addendum to the General Conditions (the "Addendum"). The Addendum includes the following: (1) schedules referred to in these General Conditions (Schedule A through F), (2) information regarding the applicability of various articles, and (3) amended articles, if any.
- C. **MULTIPLE CONTRACTS:** The Project involves multiple separate Contracts: (1) Contract for General Construction Work ("GC Contract"), (2) Contract for Plumbing Work ("Plumbing Contract"), (3) Heating/Ventilating/Air-Conditioning/Fire Protection Work ("HVAC and Fire Protection Contract"), and (4) Electrical Work ("Electrical Contract"). The Contracts pertaining to the Project are set forth in the Addendum. These Division 01 Standard General Conditions are applicable to all Contracts for the Project and shall constitute an integral part of each separate Contract to the same extent as though repeated in full therein.

1.2 SUMMARY:

- A. This section includes the following:
 - 1. Scope and Intent
 - 2. Provisions Referenced in the Contract
 - 3. Performance of Work During Non-Regular Work Hours (Pursuant to a Change Order)
 - 4. Interruption of Services at Existing Facilities
- B. This section includes a summary of each Contract, including responsibilities for coordination and temporary facilities and controls.
- C. Specific requirements of each Contract are also indicated in individual Specification Sections and on Drawings.
- D. Throughout these General Conditions, various responsibilities and obligations are assigned to each of the following four Contractors for:
 - 1) General Construction Work ("GC Contractor")
 - 2) Plumbing Work ("Plumbing Contractor")
 - 3) Heating/ Ventilating/ Air-Conditioning/ Fire Protection Work ("HVAC and Fire Protection Contractor"), and
 - 4) Electrical Work ("Electrical Contractor")

In the event the Project does not involve all four Contracts, the responsibilities and obligations of each omitted Contract shall be assigned to one of the Contracts included in the Project. The Addendum specifies which Contractor shall perform the responsibilities and obligations of each omitted Contract, as set forth in the General Conditions.



1.3 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.4 SCOPE AND INTENT:

- A. Description of Project: Refer to the Addendum for a description of this project.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 1.4 B

- B. LEED: Green Building Council's Leadership in Energy & Environmental Design (LEED) Rating System, as specified in Section 01 81 13, "SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS."

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 1.4 C

- C. COMMISSIONING: This project will be commissioned by an independent third party under separate contract with the City of New York. Commissioning shall be in accordance with ASHRAE and USGBC LEED-NC procedures, as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS. Each Contractor shall cooperate with the commissioning agent and provide whatever assistance is required.
- D. PROGRESS SCHEDULE: Refer to Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION for requirements of this project.
- E. COMPLETION OF WORK – Work to be done under each separate Contract comprises the furnishing of all labor, materials, equipment and other appurtenances, and obtaining all regulatory agency approvals necessary and required to complete the construction work in accordance with the Contract.
- F. OMISSION OF DETAILS – All work called for in the Specifications applicable to each separate Contract but not shown on the Contract Drawings in their present form, or vice versa, is required, and shall be performed by each Contractor as though it were originally delineated or described. The cost of such work shall be deemed included in the total Contract Price.
- G. WORK NOT IN SPECIFICATIONS OR CONTRACT DRAWINGS – Work not particularly specified in the Specifications nor detailed on the Contract Drawings but involved in carrying out their intent or in the complete and proper execution of the work, is required, and shall be performed by each Contractor. The cost of such work shall be deemed included in the total Contract Price.
- H. SILENCE OF THE SPECIFICATIONS – The apparent silence of the Specifications as to any detail, or the apparent omission from them of a detailed description concerning any work to be done and materials to be furnished, shall be regarded as meaning that only the best practice is to prevail and



that only the best material and workmanship is to be used and interpretation of the Specifications shall be made upon that basis.

- I. **CONFLICT BETWEEN CONTRACT DRAWINGS AND SPECIFICATIONS** – Should any conflict occur in or between the Drawings and Specifications, each Contractor shall be deemed to have estimated the most expensive way of doing the work unless each Contractor shall have asked for and obtained a decision in writing from the Commissioner before the submission of the bid as to what shall govern.
- J. **COOPERATION BETWEEN CONTRACTORS** – Inasmuch as the completion of the Project within the prescribed limit of time is dependent largely upon the close and active cooperation of all those engaged herein, it is therefore expressly understood and agreed that the Contractor shall lay out and install all work at such time or times and in such manner as not to delay or interfere with the carrying forward of the work of other Contractors. In the event of any dispute regarding possible or alleged interference between the various Contractors which may retard the progress of the work, the Contractor shall file a dispute in accordance with the Article of the Contract entitled "Dispute Resolution".

1.5 CONTRACT DRAWINGS AND SPECIFICATIONS:

- A. **SCHEDULE C** - The Contract Drawings are listed in Schedule C, which is set forth in the Addendum. Such drawings referred to in the Contract, and in the applicable Specifications for the Contract, bear the general title:

City of New York
Department of Design and Construction
Division of Public Buildings
- B. **DOCUMENTS FURNISHED TO THE CONTRACTOR** - After the award of the Contract, the GC Contractor will be furnished with five (5) complete sets of paper prints of all Contract Drawings mentioned in Paragraph A above, as well as a copy of the Specifications.
- C. **PRINTS:** Each Contractor, other than GC Contractor referred to in Paragraph B, will receive three (3) complete sets of paper prints of all Drawings listed in Paragraph A and specifications.
- D. **ADDITIONAL COPIES** of Drawings and Specifications, when requested, will be furnished to each Contractor if available.
- E. **SUPPLEMENTARY DRAWINGS** - When, in the opinion of the Commissioner, it becomes necessary to more fully explain the work to be done, or to illustrate the work further, or to show any changes which may be required, drawings known as Supplementary Drawings will be prepared by the Commissioner.
- F. **COMPENSATION** - Where Supplementary Drawings entail extra work, compensation therefore to the affected Contractor shall be subject to the terms of the Contract. The Supplementary Drawings shall be binding upon such Contractor with the same force as the Contract Drawings.
- G. **SUPPLEMENTARY DRAWING PRINTS** - Three (3) copies of prints of these Supplementary Drawings will be furnished to the affected Contractor(s).
- H. **COPIES TO SUBCONTRACTORS** - Each Contractor shall furnish to its subcontractors and material suppliers such copies of Contract Drawings, Supplementary Drawings, or copies of the Specifications as may be required for its work.



1.6 SEPARATION OF WORK BETWEEN TRADES:

- A. **SCHEDULE E** – Requirements for various items of work are included in the Specifications for the separate contracts for the Project and in the General Conditions. Schedule E delineates the responsibilities of each separate contractor for various items of work, as well as the extent to which certain items involve coordination between trades. Schedule E is included in the Addendum. The delineation set forth in Schedule E shall be taken as specific instruction to each Contractor that is responsible for the listed items of work. Schedule E is not intended to limit the Contractor's responsibility for supervision and coordination as set forth in Paragraph B below. In the event of any conflict between the Specifications, the General Conditions and Schedule E, Schedule E shall take precedence; provided, however, in the event of an omission from Schedule E (i.e., Schedule E omits either a reference to or information concerning an item of work which is set forth in the Specifications or the General Conditions), such omission from Schedule E shall have no effect and the Contractor's obligation to perform the work, as set forth in the Specifications or the General Conditions, shall remain in full force and effect.
- B. **SUPERVISION AND COORDINATION** – Each Contractor is required to supply all necessary supervision and coordination information to other Contractors who are to supply work to accommodate their installation.

1.7 COORDINATION:

- A. **COORDINATION AND COOPERATION** - Each Contractor shall consult and study the requirements of the Contract Drawings and Specifications of all Contracts furnished to the Contractor, including all work to be performed by trade subcontractors, so that the Contractor may become acquainted with the work of the project as a whole in order to achieve the proper coordination and cooperation necessary for the efficient and timely performance of the work.
- B. **CONTRACTOR TO CHECK DRAWINGS:** - Each Contractor shall verify all dimensions, quantities and details shown on the Contract Drawings, Schedules, or other data received from the Commissioner, and shall notify the Commissioner of all errors, omissions, conflicts and discrepancies found therein. Notice of such errors shall be given before each Contractor proceeds with any work. Figures shall be used in preference to scale dimensions and large-scale drawings in preference to small-scale drawings.

1.8 SHOP DRAWINGS AND RECORD DRAWINGS:

- A. Refer to Division I Section 01 33 00 – SUBMITTAL PROCEDURES and Section 01 78 39 – PROJECT RECORD DRAWINGS for requirements applicable to shop drawings and record drawings.

1.9 INTEGRATED DRAWINGS:

- A. Refer to Division I Section 01 33 00 – SUBMITTAL PROCEDURES for requirements of each Contractor.



1.10 TEMPORARY FACILITIES, SERVICES AND CONTROLS:

- A. Refer to Division I Section 01 50 00 – TEMPORARY FACILITIES SERVICES AND CONTROLS and SCHEDULE E which is set forth in the Addendum for the responsibilities of each separate Contractor.

1.11 DUST CONTROL:

- A. The GC Contractor shall prepare, execute and manage a "Dust Control Plan" for the prevention of the emission of dust from construction related activities in compliance with 15 RCNY 13-01 et. seq.

1.12 SUBSTITUTIONS:

- A. Each Contractor shall cooperate with other Contractors involved to coordinate approved substitutions with remainder of the Work.

1.13 PROVISIONS REFERENCED IN THE CONTRACT:

- A. SCHEDULE A - Various Articles of the Contract refer to requirements set forth in Schedule A of the General Conditions. Schedule A, which is included in the Addendum, sets forth (1) the referenced Articles of the Contract, and (2) the specific requirements applicable to the Contract.
- B. EXTENSION OF TIME - Applications for Extensions of Time, as indicated in Article 13 of the Contract, shall be made in accordance with the Rules of the Procurement Policy Board.
- C. PARTIAL PAYMENTS FOR MATERIALS IN ADVANCE OF THEIR INCORPORATION IN THE WORK PURSUANT TO ARTICLE 42 OF THE CONTRACT – In order to better insure the availability of materials, fixtures and equipment when needed for the work, the Commissioner may authorize partial payment for certain materials, fixtures and equipment, prior to their incorporation in the work, but only in strict accordance with, and subject to, all the terms and conditions set forth in the Specifications, unless an alternate method of payment is elsewhere provided in the Specifications for specified materials, fixtures or equipment.
1. Each Contractor shall submit to the Commissioner a written request, in quadruplicate, for payment for materials purchased or to be purchased which need to be paid prior to their actual incorporation in the work. The request shall be accompanied by a schedule of the types and quantities of materials, and shall state whether such materials are to be stored on or off the site.
 2. Where the materials are to be stored off the site, they shall be stored at a place other than the Contractor's premises (except with the written consent of the Commissioner) and under the conditions prescribed or approved by the Commissioner. The Contractor shall set apart and separately store at the place or places of storage all materials and shall clearly mark same "PROPERTY OF THE CITY OF NEW YORK", and further, shall not at any time move any of said materials to another off-site place of storage without the prior written consent of the Commissioner. Materials may be removed from their place of storage off the site for incorporation in the work upon approval of the Resident Engineer.
 3. Where the materials are to be stored at the site, they shall be stored at such locations as shall be designated by the Resident Engineer and only in such quantities as, in the opinion of the Resident Engineer, will not interfere with the proper performance of the work by the Contractor or by other Contractors then engaged in performing work on the site. Such materials shall not be removed from their place of storage on the site except for incorporation in the work, without the approval of the Resident Engineer.



4. INSURANCE

- a. STORAGE OFF-SITE – Where the materials are stored off the site and until such time as they are incorporated in the work, the Contractor shall fully insure such materials against any and all risks of destruction, damage or loss including but not limited to fire, theft, and any other casualty or happening. The policy of insurance shall be payable to the City of New York. It shall be in such terms and amounts as shall be approved by the Commissioner and shall be placed with a company duly licensed to do business in the State of New York. The Contractor shall deliver the original and one (1) copy of such policy or policies marked “Fully Paid” to the Commissioner.
 - b. STORAGE ON THE SITE – Where the materials are stored at the site, the Contractor shall furnish satisfactory evidence to the Commissioner that they are properly insured against loss, by endorsements or otherwise, under the policy or policies of insurance obtained by the Contractor to cover losses to materials owned or installed by the Contractor. The policy of insurance shall cover fire and extended coverage against windstorm, hail, explosion and riot attending a strike, civil commotion, aircraft, vehicles and smoke.
5. All costs, charges and expenses arising out of the storage of such materials, shall be paid by the Contractor and the City hereby reserves the right to retain out of any partial or final payment made under the Contract an amount sufficient to cover such costs, charges and expenses with the understanding that the City shall have and may exercise any and all other remedies at law for the recovery of such cost, charges and expenses. There shall be no increase in the Contract price for such costs, charges and expenses and the Contractor shall not make any claim or demand for compensation therefore.
 6. The Contractor shall pay any and all costs of handling and delivery of materials, to the place of storage and from the place of storage to the site of the work; and the City shall have the right to retain from any partial or final payment an amount sufficient to cover the cost of such handling and delivery.
 7. In the event that the whole or any part of these materials are lost, damaged or destroyed in advance of their satisfactory incorporation in the work, the Contractor, at the Contractor's own cost, shall replace such lost, damaged or destroyed materials of the same character and quality. The City will reimburse the Contractor for the cost of the replaced materials to the extent, and only to the extent, of the funds actually received by the City under the policies of insurance hereinbefore referred to. Until such time as the materials are replaced, the City will deduct from the value of the stored materials or from any other money due under the Contract, the amount paid to the Contractor for such lost, damaged or destroyed materials.
 8. Should any of the materials paid for the City hereunder be subsequently rejected or incorporated in the work in a manner or by a method not in accordance with the Contract Documents, the Contractor shall remove and replace, at Contractor's own cost, such defective or improperly incorporated material with materials complying with the Contract Documents. Until such materials are replaced, the City will deduct from the value of the stored materials or from any other money due the Contractor, the amount paid by the City for such rejected or improperly incorporated materials.
 9. Payments for the cost of materials made hereunder shall not be deemed to be an acceptance of such materials as being in accordance with the Contract Documents, and the Contractor always retains and must comply with the Contractor's duty to deliver to the site and properly incorporate in the work only materials which comply with the Contract Documents.
 10. The Contractor shall retain any and all risks in connection with the damage, destruction or loss of the materials paid for hereunder to the time of delivery of the same to the site of the work and their proper incorporation in the work in accordance with the Contract Documents.



11. The Contractor shall comply with all laws and the regulations of any governmental body or agency pertaining to the priority purchase, allocation and use of the materials.
12. When requesting payment for such materials, the Contractor shall submit with the partial estimate duly authenticated documents of title, such as bills of sale, invoices or warehouse receipts, all in quadruplicate. The executed bills of sale shall transfer title to the materials from the Contractor to the City. (In the event that the invoices state that the material has been purchased by a subcontractor, bills of sale in quadruplicate will also be required transferring title to the materials from subcontractor to the Contractor).
13. Where the Contractor, with the approval of the Commissioner, has purchased unusually large quantities of materials in order to assure their availability for the work, the Commissioner, at the Commissioner's option, may waive the requirements of Paragraph 12 provided the Contractor furnishes evidence in the form of an affidavit from the Contractor in quadruplicate, and such other proof as the Commissioner may require, that the Contractor is the sole owner of such materials and has purchased them free and clear of all liens and other encumbrances. In such event, the Contractor shall pay for such materials and submit proof thereof, in the same manner as provided in Paragraph 12 hereof, within seven (7) days after receipt of payment therefore from the Comptroller. Failure on the part of the Contractor to submit satisfactory evidence that all such materials have been paid for in full, shall preclude the Contractor from payments under the Contract.
14. The Contractor shall include in each succeeding partial estimate requisition a summary of materials stored which shall set forth the quantity and value of materials in storage, on or off the site, at the end of each preceding estimate period; the amount removed for incorporation in the work; the quantity and value of materials delivered during the current period and the total value of materials on hand for which payment thereof will be included in the current payment estimate.
15. Upon proof to the satisfaction of the Commissioner of the actual cost of such materials and upon submission of proper proof of title as required under Paragraph 12 or Paragraph 13 hereof, payment will be made therefore to the extent of 85%, provided however, that the cost so verified, established and approved shall not exceed the estimated cost of such materials included in the approved detailed breakdown estimate submitted in accordance with Article 41 of the Contract; if it does, the City will pay only 85% approved estimated cost.
16. Upon the incorporation in the work of any such materials, which have been paid for in advance of such incorporation in accordance with the foregoing provisions, payment will be made for such materials incorporated in the work pursuant to Article 42 of the Contract, less any sums paid pursuant to Paragraph 15 herein.

D. MOBILIZATION PAYMENT – A line item for mobilization shall be allowed on each Contractor's Detailed Bid Breakdown submitted in accordance with Article 41 of the Contract. The Mobilization Payment is intended to include the cost of required bonds, insurance coverage and/or any other expenses required for the initiation of the Contract Work. All costs for mobilization shall be deemed included in the total Contract Price. The Detailed Bid Breakdown shall reflect, and the Mobilization Payment shall be made, in accordance with the following schedule:

Contract Amount	Percent	Mobilization
Less than - \$ 50,000	x 0	= 0
\$ 50,000 - \$ 100,000	x	= \$ 6,000
\$ 100,001 - \$ 500,000	x 6	= \$ 6,000 (min) - \$ 30,000 (max)



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\$ 500,000 - \$ 2,500,000	x	5	=	\$ 30,000 (min) - \$ 125,000 (max)
Over - \$ 2,500,000	x	4	=	\$ 125,000 (min) - \$ 300,000 (max)

Each Contractor may requisition for one-half (1/2) of the Mobilization Payment upon satisfactory completion of the following as applicable:

1. Installation of any required field office(s).
2. Submission of all required insurance certificates and bonds.
3. Approval by the Department of Design and Construction of the coordinated progress schedule for the project and the Contractor's Shop Drawing schedule.

The remaining balance of the Mobilization Payment may be requisitioned only after 10 percent (10%) of the Contract price, exclusive of the total amount of Mobilization Payments made or to be made hereunder, shall have been approved for payment.

- E. **ULTRA LOW SULFUR DIESEL FUEL AND BEST AVAILABLE TECHNOLOGY REPORTING:** Each Contractor shall submit reports to the Commissioner regarding the use of Ultra Low Sulfur Diesel Fuel in Non-Road Vehicles, and the implementation of Best Available Technology (BAT), as set forth in Article 5.4 of the Contract. Such reports shall be submitted in accordance with the schedule, format, directions and procedures established by the Commissioner.

1.14 PERFORMANCE OF WORK DURING NON-REGULAR WORK HOURS:

- A. **NON-REGULAR WORK HOURS:** The Commissioner may issue a change order in accordance with Article 25 of the Contract which (1) directs the Contractor to perform the Work, or specific components thereof, during other than regular work hours (i.e., evenings, weekends and holidays), and (2) provides compensation to the Contractor for costs in connection with the performance of Work during other than regular work hours. The Commissioner may issue a change order if a delay has occurred and such delay is not the fault of the Contractor, or if the work is of such an important nature that delay in completing such work would result in serious disadvantage to the public.
- B. **PROCEDURE:** The affected Contractor shall (1) obtain whatever permits may be required for performance of the work during other than regular business hours, and (2) pay all necessary fees in connection with such permits. In addition, if directed by the Commissioner, the Contractor shall make immediate application to the Commissioner of the Department of Labor, State of New York, for dispensation in accordance with Subdivision 2 of Section 220 of the Labor Law.

1.15 INTERRUPTION OF SERVICES AT EXISTING FACILITIES:

- A. **EVENING AND WEEKEND WORK -** Where performance of the Work requires the temporary shutdown(s) of services, such shutdown(s) shall be made at night or on weekends or at such times that will cause no interference with the established routines and operations of the facility in question.
1. Where weekend or evening work is required due to unavoidable service shutdowns, such work shall be performed at no extra cost to the City. Components of the Work that must be performed during other than regular work hours are indicated in the Drawings and/or the Specifications.



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B. INTERRUPTION OF EXISTING FACILITIES:

1. Each Contractor shall not interrupt any of the services of the facility nor interfere with such services in any way without the permission of the Commissioner. Such interruption or interferences shall be made as brief as possible, and only at such time stated.
2. Under no circumstances shall the Contractor, its subcontractors, or its workers, be permitted to use any part of the project as a shop, without the permission of the Commissioner.
3. Unnecessary noise shall be avoided at all times and necessary noise shall be reduced to a minimum.
4. Toilet facilities, water and electricity must be operational at all times (i.e. 24/7). No services of the facility can be interrupted in any way without the permission of the Commissioner. Careful coordination of all work with the Resident Engineer must be done to maintain the operational level of the project personnel at the facility.
5. The Contractor shall schedule the work to avoid noise interference that will affect the normal functions of the facility. In particular, construction operations producing noises that are objectionable to the functions of the facility must be scheduled at times of day or night, day of the week, or weekend, which will not interfere with personnel at the facility. Any additional cost resulting from this scheduling shall be borne by the Contractor.
6. The Contractor shall arrange to work continuously, including evening and weekend hours, if required, to assure that services will be shut down only during the time actually required to make the necessary connections to the existing facility.
7. The Contractor shall give ample written notice in advance to the Commissioner and personnel at the facility of any required shutdown.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 10 00



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
MULTIPLE CONTRACT PROJECTS
Issue Date January 15, 2015

NO TEXT

SUMMARY
01 10 00 -10



SECTION 01 31 00
PROJECT MANAGEMENT AND COORDINATION

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].
- B. LEED: Refer to the Addendum to identify whether this project is designed to comply with a Certification Level according to the U.S. Green Building Council's Leadership in Energy & Environmental Design (LEED) Rating System, as specified in Section 01 81 13, "SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS."
- C. COMMISSIONING: Refer to the Addendum to identify whether this project will be commissioned by an independent third party under separate contract with the City of New York. Commissioning shall be in accordance with ASHRAE and USGBC LEED-NC procedures, as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS. Each Contractor shall cooperate with the commissioning agent and provide whatever assistance is required.

1.2 SUMMARY:

- A. This Section includes administrative provisions for coordinating construction operations on the Project including without limitation the following.
 - 1. Coordination Drawings.
 - 2. Administrative and supervisory personnel.
 - 3. Project meetings.
 - 4. Requests for Interpretation (RFIs).
- B. This section includes the following:
 - 1. Definitions
 - 2. Coordination
 - 3. Submittals
 - 4. Administrative and Supervisory Personnel
 - 5. Project Meetings
 - 6. Requests for Interpretation (RFI's)
 - 7. Correspondence
 - 8. Contractor's Daily Reports
 - 9. Alternate and Substitute Equipment
- C. RELATED SECTIONS: include without limitation the following:
 - 1. Section 01 10 00 SUMMARY
 - 2. Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION
 - 3. Section 01 33 00 SUBMITTALS
 - 4. Section 01 35 26 SAFETY REQUIREMENTS
 - 5. Section 01 73 00 EXECUTION REQUIREMENTS
 - 6. Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL



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7. Section 01 77 00

PROJECT CLOSEOUT PROCEDURES

1.3 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.4 COORDINATION:

- A. Coordination: Each Contractor shall coordinate its construction operations, including those of its subcontractors, with other entities to ensure the efficient and orderly installation of each part of the Work. Each Contractor shall coordinate the various operations required by different Sections of the Specifications that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence in order to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to ensure maximum accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
 - 4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.
- B. Each Contractor shall prepare memoranda for distribution to its subcontractors and other involved entities, outlining special procedures required for coordination. Such memoranda shall include required notices, reports, and meeting minutes as applicable.
- C. Administrative Procedures: Each Contractor shall coordinate scheduling and timing of required administrative procedures with other construction activities and activities of its subcontractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include without limitation the following:
 - 1. Preparation of Contractor's Construction Schedule.
 - 2. Installation and removal of temporary facilities and controls.
 - 3. Delivery and processing of submittals.
 - 4. Progress meetings.
 - 5. Pre-installation conferences.
 - 6. Startup and adjustment of systems.
 - 7. Project closeout activities.
- D. Conservation: Each Contractor shall coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
- E. Salvaged Items, Material and/or Equipment: The Specifications may identify certain items, materials or equipment which must be salvaged by each Contractor and handled or disposed of as directed. Each



Contractor shall comply with all directions in the Specifications regarding the salvaging and handling of identified items, material or equipment.

1.5 SUBMITTALS:

- A. Submit shop drawings, product data, samples etc. in compliance with Section 01 33 00, SUBMITTAL PROCEDURES.
- B. Coordination Drawings: Each Contractor shall prepare applicable Coordination Drawings in compliance with the requirements for Integrated Drawings in Section 01 33 00, SUBMITTAL PROCEDURES.
- C. Safety Plan in compliance with Section 01 35 26, SAFETY REQUIREMENTS PROCEDURES.
- D. Waste Management Plan in compliance with Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
- E. Key Personnel Names: Within 15 days after the Notice to Proceed, each Contractor shall submit a list of key personnel assignments of the Contractor and its subcontractors, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in case of the absence of individuals assigned to Project.
 - 1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.
 - 2. In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work. Include special personnel required for coordinating all operations by its subcontractors.

1.6 PROJECT MEETINGS:

- A. General: The Resident Engineer will hold regularly scheduled construction progress meetings at the site, at which time each Contractor and appropriate subcontractors shall have their representatives present to discuss all details relative to the execution of the work. The Resident Engineer shall preside over these meetings.
 - 1. Agenda: Prior to each meeting, the Resident Engineer will consult with the Contractors and will prepare an agenda of items to be discussed. In general, after informal discussion of any item on the agenda, the Resident Engineer will summarize the discussion in a brief written statement, and each Contractor will then dictate a brief statement for the record.
 - 2. Coordination: In addition to construction progress meetings called by the Resident Engineer, the GC Contractor shall hold regularly scheduled meetings for the purpose of coordinating, expediting and scheduling the work of all Contracts in accordance with the master coordinated Job Progress Chart. All Contractors and their subcontractors, material suppliers or vendors whose presence is necessary, are required to attend. These meetings may, at the discretion of the GC Contractor, be held at the same place and immediately following the project meetings held by the Resident Engineer. Minutes of these meetings shall be recorded, typed and printed by the GC Contractor and distributed to all parties concerned.
- B. PRECONSTRUCTION KICK-OFF MEETING:
 - 1. The Resident Engineer will schedule a preconstruction kick-off meeting either at DDC's main office or at the Project site to review responsibilities and personnel assignments and clarify the role of each participant. Unless otherwise directed the Design Consultant will record and distribute meeting minutes.



2. Attendees: Authorized representative of the Client Agency; Design Consultant; each Contractor and their superintendents, subcontractor(s) and their superintendent(s); LEED sub-consultant and Commissioning Authority /Agent (CxA) as applicable and other concerned parties. All participants at the meeting shall be familiar with the Project and authorized to conclude matters relating to the Contract Work.
3. Agenda: Includes without limitation the following as applicable:
 - a. Establishing construction schedule
 - b. Schedule for regular construction meetings
 - c. Phasing
 - d. Critical work sequencing and long-lead items
 - e. Designation of key personnel and their duties
 - f. Reviewing Application for Payment and Change Order Procedures
 - g. Procedures for Requests for Information (RFIs.)
 - h. Review Permits and Approval requirements
 - i. Review all recent Administrative Code reporting requirements relating to the project, (i.e. LL 77, LL86 etc.)
 - j. Procedures for testing and inspecting
 - k. Reviewing special conditions at the Project site
 - l. Distribution of the Contract Documents
 - m. Submittal procedures
 - n. Safety Procedures
 - o. LEED requirements
 - p. Commissioning Requirements
 - q. Preparation of Record Documents
 - r. Historic Treatment requirements
 - s. Use of the premises
 - t. Work restrictions
 - u. Client Agency occupancy requirements
 - v. Responsibility for temporary facilities services and controls
 - w. Construction Waste Management and Disposal
 - x. Indoor Air Quality Management Plan
 - y. Dust Mitigation Plan
 - z. Office, work, and storage areas
 - aa. Equipment deliveries and priorities
 - bb. Security
 - cc. Progress cleaning
 - dd. Working hours

C. CONSTRUCTION PROGRESS MEETINGS:

1. The Resident Engineer will schedule and conduct construction progress meetings at bi-weekly intervals or as otherwise determined. All participants at the meeting shall be familiar with the Project and authorized to conclude matters relating to the Work. Unless otherwise directed, the Design Consultant will record and distribute meeting minutes.



2. Attendees:
 - a. Design Consultant and applicable sub-consultants
 - b. Client Agency Representative
 - c. Representatives from each Contractor, sub-contractor(s), suppliers or other entities involved in the current progress, planning, coordination or future activities of the Work
 - d. Other appropriate DDC personnel, DDC consultants and concerned parties
3. Agenda: Includes without limitation the following:
 - a. Review the Construction Schedule and progress of the Work. Determine if the Work is on time, ahead of schedule or behind schedule. Determine actions to be taken to maintain or accelerate the schedule
 - b. Review and approve prior meeting minutes and follow up open issues
 - c. Coordinate work between each subcontractor
 - d. Sequence of Operations
 - e. Status of submittals, deliveries and off-site fabrication
 - f. Status of inspections and approvals by governing agencies
 - g. Temporary facilities and controls
 - h. Review Site Safety
 - i. Quality and work standards
 - j. Field observations
 - k. Status of correction of deficient items
 - l. RFI's
 - m. Pending changes
 - n. Status of outstanding Payments and Change Orders
 - o. LEED requirements including Construction Waste Management, Indoor Air Quality Plan and Commissioning
 - p. Status of Administrative Code reporting requirements related to the project.

1.7 REQUESTS FOR INFORMATION (RFI):

- A. Procedure: Immediately on discovery of the need for information or interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, the Contractor shall prepare and submit an RFI in the form specified by the Resident Engineer.
 1. RFI shall originate with each Contractor. RFIs submitted by entities other than the Contractor will be returned with no response.
 2. Coordinate and submit RFI in a prompt manner to the Resident Engineer so as to avoid delays in Contractor's work or work of its subcontractors.
 3. RFI Log: Each Contractor shall prepare, maintain, and submit a tabular log of RFIs organized by the RFI number monthly to the Resident Engineer.
 4. On receipt of responses and action to the RFI, the Contractor shall update the RFI log and immediately distribute the RFI response to affected parties. Review response(s) and notify the Resident Engineer immediately if the Contractor disagrees with response(s).

1.8 CORRESPONDENCE:

- A. Copies of all correspondence to DDC shall be sent directly to the Resident Engineer at the job site.



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MULTIPLE CONTRACT PROJECTS
Issue Date - January 15, 2015

1.9 CONTRACTOR'S DAILY REPORTS:

- A. Each Contractor shall prepare and submit Daily Construction Progress Reports as outlined in Section 01 32 00, CONSTRUCTION PROGRESS DOCUMENTATION.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 31 00



**SECTION 01 32 00
CONSTRUCTION PROGRESS DOCUMENTATION**

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for establishing an effective base line schedule for the project and documenting the progress of construction during performance of the work by developing, revising as necessary, various documents including but not limited to the following:

1. Baseline Construction Schedule.
2. Composite Schedule for entire project.
3. Recovery Composite Schedule.
4. Revised and/or updated Composite Schedule.
5. Submittals Schedule.
6. Daily construction reports.
7. Material location reports.
8. Field condition reports.
9. Special reports.

- B. RELATED SECTIONS: include without limitation the following:

1. Section 01 10 00 SUMMARY
2. Section 01 32 22 PHOTOGRAPHIC DOCUMENTATION
3. Section 01 33 00 SUBMITTAL PROCEDURES
4. Section 01 40 00 QUALITY REQUIREMENTS

1.3 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.



- C. **Baseline Construction Schedule:**
A horizontal bar chart type schedule (Microsoft Project OR similar program) listing all the activities and their duration for entire contract duration OR construction period, including logical ties and interrelations between the activities necessary for the timely and successful completion of the project. Critical path activities shall be clearly marked. The Baseline construction schedule is a preliminary schedule that must be reviewed and approved by the Resident Engineer.
- D. **Composite Schedule:**
A composite horizontal bar chart type schedule (Microsoft Project OR similar program) listing all activities to be performed by the Contractor and its subcontractors, the duration of each activity including logical ties and interrelations between activities, and the sequence of each of necessary activities for the timely and successful completion of the project within the stipulated contract duration. Critical path activities shall be clearly marked. The Composite schedule must be signed and submitted by the Contractor within thirty (30) calendar days after the date established for commencement of the Contract, unless otherwise directed. The Composite Schedule must be reviewed and approved by the Resident Engineer.
- E. **Recovery Composite Schedule:** A Recovery Composite Schedule is not required unless the City issues an Acceleration Change Order.

A Composite Schedule outlining and incorporating extraordinary efforts required to recover lost time with the aim of achieving completion of the project within the stipulated contract duration, plus authorized time extensions. In such case special attention must be given to keep the delays as minimum as possible and must establish the nature of efforts such as extended hours of work, weekend work, accelerated fabrication, required action(s) or effort(s) by the Contractor, its subcontractors, consultants, clients, end users and/or other concerned parties.

Such schedule must be prepared and submitted within Five (5) calendar days of request by the Resident Engineer. The Recovery Composite Schedule must be reviewed and approved by the Resident Engineer.
- F. **Revised and/or Updated Composite Schedule:**

A Baseline construction schedule OR Composite Schedule OR Recovery Composite Schedule for the project that shows the actual duration of all the completed activities, including duration of and the reasons for delays, if any has occurred, AND revisions to all remaining activities of the Contractor and its subcontractors, including changes, if any, to logical ties, interrelations and the sequence of each of the outlined activities. Any such revisions should be shown on the row just below the approved schedule of the respective activity so that revisions can be compared.

The Revised and/or updated Composite Schedule must be reviewed and approved by the Resident Engineer.
- G. **Activity:** A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
- H. **Event:** The starting or ending point of an activity.
- I. **Fragment:** A part of the activity that breaks down activities into smaller activities for greater detail.
- J. **Milestone:** A key or critical point in time for reference or measurement.
- K. **Network Diagram:** A graphic diagram of a network schedule, showing activities and activity relationships.



PART II – PRODUCTS

2.1 BASELINE CONSTRUCTION SCHEDULE:

- A. Each Contractor shall prepare a preliminary horizontal bar-chart-type construction schedule for the project. Submit the Baseline Construction Schedule to the Resident Engineer within (15) fifteen calendar days after the date established for commencement of the Contract, unless directed otherwise. The Baseline Schedule must be reviewed and approved by the Resident Engineer.
1. Provide a separate time bar for each significant construction activity. Coordinate each activity on the schedule with other construction activities for proper interrelationship & sequence.
 2. Duration: The duration of each activity on the schedule besides installation must clearly show required duration of filing for permits, inspections, testing, approvals, shop drawings and materials submittals and approvals, fabrication, delivery, phasing for each construction activity.
 3. Schedule shall be time-scaled in not more than weekly increments, with the dates of the first day (Monday) of each week indicated.
 4. Completion of all the project activities shall be indicated in advance of the date established for completion of the Contract, allowing time for required inspection and punch list work.
 5. Clearly show time bar for all the tasks, to be completed before start of physical work of scheduled activities, including but not limited to obtaining required permit, subcontractor approval, submission and approval of shop drawings, field verification, time for fabrication and delivery, testing of materials and/or samples, preparation and approval of mock-up sample, curing, pre-testing of soil, pre-testing of equipment - including start up, testing & adjusting, filing for inspection by regulatory agencies, training, final use, etc. required to maintain orderly progress of the activity. A special consideration must be given to those activities requiring early approvals because of long lead-time for manufacture or fabrication.
 6. Phasing: Arrange all activities in proper sequence to reflect requirements for phased completion, work by other entities, work by the City, City furnished items, coordination with existing work, limitations arising due to continued occupancies, non-interruptible services, partial completion for occupancy, site restrictions, provisions for future work, seasonal variations, environmental control, and similar conditions of the project.
 7. Arrange all activities and/or show interrelationship and logical sequence of all activities, determine and mark all critical path activities including any phasing reflecting actual project condition.
 8. Keep at least two blank horizontal bars between all activities for recording actual progress and submitting Revised Schedule as defined in Sub-Section 1.3 G
 9. If necessary a new revised schedule shall be prepared in the same manner as outlined above.

2.2 COMPOSITE SCHEDULE FOR THE PROJECT:

- A. The GC Contractor shall prepare a Composite Schedule based on the approved Baseline Schedule. Such schedule shall indicate graphically and chronologically the start and completion of each and every activity, including all the pre-activity and post activity tasks. Keep at least two blank horizontal bars between all activities for recording actual progress and/or revisions.
1. If necessary the Contractors shall meet with each subcontractor and with the Resident Engineer to review and make warranted adjustments and finalize the Composite Schedule. Once the schedule is finalized, each Contractor shall sign and date a reproducible form of the Composite Schedule. The Composite Schedule must be finalized and signed by each Contractor within (30) thirty calendar days after the date established for commencement of the Contract, unless directed otherwise. The Composite Schedule must be reviewed and approved by the Resident Engineer.



2.3 RECOVERY COMPOSITE SCHEDULE:

- A. A Recovery Composite Schedule is not required unless the City issues an Acceleration Change Order. A Recovery Composite Schedule outlining and incorporating extraordinary efforts required to recover lost time with the aim of achieving completion of the project within the stipulated contract duration, plus authorized time extensions, must be developed and submitted within (5) five calendar days of the request by the Resident Engineer. Such Recovery Composite Schedule shall include all information as defined in Sub-Section 1.3 F and shall be prepared in the same manner as outlined in Sub-Sections 2.1 and 2.2. The Recovery Composite Schedule must be reviewed and approved by the Resident Engineer.

2.4 REVISED AND/OR UPDATED COMPOSITE SCHEDULE:

- A. Each Contractor shall revise and/or update the approved Composite Schedule as directed. The Revised schedule shall be prepared in the same manner as outlined above in Sub-Sections 2.1 and 2.2.
- B. Each Contractor shall mark actual progress, delays, work stoppage etc. in the row just below the approved schedule for the respective activity so that revisions can be compared.
- C. Such schedule also shall indicate graphically and chronologically any revisions to the start and completion of the remaining activities including revisions to all the pre-activity and post activity tasks for all subcontractors.
- D. If necessary, the Contractors shall meet with each subcontractor and with the Resident Engineer to review and make warranted adjustments and finalize the Revised Composite Schedule. Once the schedule is finalized, each Contractor shall sign and date a reproducible form of the Schedule. Such schedule must be prepared and submitted by each Contractor within Five (5) calendar days of request by the Resident Engineer. The Revised Composite Schedule must be reviewed and approved by the Resident Engineer.

2.5 SUBMITTALS SCHEDULE:

- A. Preparation: Each Contractor shall submit a schedule of submittals, arranged in chronological order by dates required by the construction schedule. Include time required for review, re-submittal, ordering, manufacturing, fabrication, and delivery when establishing dates.
- B. SCHEDULE F: Schedule F sets forth all submittal requirements for shop drawings and material samples. Schedule F is included in the Addendum. At the kick-off meeting, each Contractor must review this Schedule with the Resident Engineer and the Design Consultant. Within 10 days after the kick-off meeting, each Contractor must complete information on Schedule F concerning the submission date, the required delivery date and the fabrication time. For all required submittals of shop drawings and material samples, the Schedule F provided by each Contractor must indicate a submission date which is at least 20 business days prior to the date of the manufacture of the item or materials to be installed. In addition, if so directed by the Commissioner, the Schedule F provided by each Contractor must indicate a submission date for shop drawings and/or material samples of specified items or materials which is within 60 business days after the kick-off meeting. In the event of any conflict between the Specifications and Schedule F, Schedule F shall take precedence; provided, however, in the event of an omission from Schedule F (i.e., Schedule F omits either a reference to or information concerning a submittal requirement which is set forth in the Specifications), such omission from Schedule F shall have no effect and each Contractor's submittal obligation, as set forth in the Specifications, shall remain in full force and effect.
- C. Review: The Resident Engineer will review the Schedule F submitted by each Contractor. Upon acceptance, the Resident Engineer will date and sign the schedule as approved and transmit it to the Design Consultant, Contractors and others within DDC as he/she deems appropriate.



2.6 REPORTS:

- A. Daily Construction Reports: Each Contractor shall submit to the Resident Engineer written Daily Construction Reports at the end of each work day, recording basic information such as the date, day, weather conditions, and contract days passed, remaining contract duration/days and the following information concerning the Project:

Information: The reports shall be prepared by each Contractor's Superintendent and shall bear the Contractor's Superintendent's signature. Each report shall contain the following information:

1. List of name of Contractor, subcontractors, their work force in each category, and details of activities performed.
2. The type of materials and/or major equipment being installed by the Contractor and/or by each subcontractor.
3. The major construction equipment being used by the Contractor and/or subcontractors.
4. Material and Equipment deliveries.
5. High and low temperatures and general weather conditions.
6. Accidents.
7. Meetings and significant decisions.
8. Unusual events.
9. Stoppages, delays, shortages, and losses.
10. Meter readings and similar recordings
11. Emergency procedures.
12. Orders and/or requests of authorities having jurisdiction.
13. Approved Change Orders received and implemented.
14. Field Orders and Directives received and implemented.
15. Services connected and disconnected.
16. Equipment or system tests and startups.
17. Partial Completions and occupancies.
18. Substantial Completions authorized.

NOTE: If there is NO ACTIVITY at site, a daily report indicating so and the reason for no activity at the site must be submitted.

- B. Material Location Reports: Each Contractor shall submit a Material Location Report at weekly OR monthly intervals as determined and established by the Resident Engineer. Such report shall include a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.
- C. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit a Request For Information (RFI) form with a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.7 SPECIAL REPORTS:

- A. Accident report, incident report, special condition report for the conditions out of control of any party involved with the project effecting project progress, explaining impact on the project schedule and cost if any.

PART III – EXECUTION (Not Used)

END OF SECTION 01 32 00



NEW YORK CITY DEPARTMENT OF
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Division 01 – DDC STANDARD GENERAL CONDITIONS
MULTIPLE CONTRACT PROJECTS
Issue Date - January 15, 2015

NO TEXT

CONSTRUCTION PROGRESS DOCUMENTATION
01 32 00 - 6



SECTION 01 32 33
PHOTOGRAPHIC DOCUMENTATION

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SECTION 01 32 33

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.12 SUMMARY:

- A. This Section includes the following:
1. Photographic Media
 2. Construction Photographs
 3. Pre-construction Photographs
 4. Periodic Construction Progress Photographs
 5. Special Photographs
 6. DVD Recordings
 7. Final Completion Construction Photographs
- B. RELATED SECTIONS: include without limitation the following:
1. Section 01 10 00 SUMMARY
 2. Section 01 33 00 SUBMITTAL PROCEDURES
 3. Section 01 35 91 HISTORIC TREATMENT PROCEDURES
 4. Section 01 78 39 CONTRACT RECORD DOCUMENTS
 5. Section 01 81 19 INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS
- C. PHOTOGRAPHER - The GC Contractor shall employ and pay for the services of a professional photographer who shall take photographs showing the progress of the work for all Contracts.

1.3 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.4 SUBMITTALS:

- A. Qualification Data: For photographer.



- B. Key Plan: With each Progress Photograph Submittal include a key plan of Project site and building with notation of vantage points marked for location and direction of each image. Indicate location, elevation or story of construction. Include same label information as corresponding set of photographs.
- C. Construction Progress Photograph Prints: Take Progress Photographs bi-weekly and submit four color prints of each photographic view for each trade to the Resident Engineer. Such photographs shall be included in each monthly progress report or as otherwise directed by the Resident Engineer.
- D. Construction Photograph Negatives: Submit a complete set of photographic negatives in individually protected negative sleeves with each submittal of prints. Identify negatives with label matching photographic prints.
- E. Digital Images: If Digital Media is used, submit a complete set of digital color image electronic files on CD-ROM with each submittal of prints. Identify electronic media with date photographs were taken. Submit images that have same aspect ratio as the sensor, un-cropped.

1.5 QUALITY ASSURANCE:

- A. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of construction projects for not less than three years.

1.6 COORDINATION:

- A. Each Contractor and its subcontractor(s) shall cooperate with the photographer and provide auxiliary services requested, including access to Project site and use of temporary facilities, including temporary lighting required to produce clear, well-lit photographs without obscuring shadows.

1.7 COPYRIGHT:

- A. The GC Contractor shall include the provisions set forth below in its agreement with the Photographer who will provide the construction photographs described in this section. The GC Contractor shall submit to the Resident Engineer a copy of its agreement with the Photographer.
- B. Any photographs, images and/or other materials produced pursuant to this Agreement, and any and all drafts and/or other preliminary materials in any format related to such items produced pursuant to this Agreement, shall upon their creation become the exclusive property of the City.
- C. Any photographs, images and/or other materials provided pursuant to this Agreement ("Copyrightable Materials") shall be considered "work-made-for-hire" within the meaning and purview of Section 101 of the United States Copyright Act, 17 U.S.C. § 101, and the City shall be the copyright owner thereof and of all aspects, elements and components thereof in which copyright protection might exist. To the extent that the Copyrightable Materials do not qualify as "work-made-for-hire," the Photographer hereby irrevocably transfers, assigns and conveys exclusive copyright ownership in and to the Copyrightable Materials to the City, free and clear of any liens, claims, or other encumbrances. The Photographer shall retain no copyright or intellectual property interest in the Copyrightable Materials. The Copyrightable Materials shall be used by the Photographer for no purpose other than in the performance of this Agreement without the prior written permission of the City. The Department may grant the Photographer a license to use the Copyrightable Materials on such terms as determined by the Department and set forth in the license.
- D. The Photographer acknowledges that the City may, in its sole discretion, register copyright in the Copyrightable Materials with the United States Copyright Office or any other government agency authorized to grant copyright registrations. The Photographer shall fully cooperate in this effort, and agrees to provide any and all documentation necessary to accomplish this.



- E. The Photographer represents and warrants that the Copyrightable Materials: (i) are wholly original material not published elsewhere (except for material that is in the public domain); (ii) do not violate any copyright Law; (iii) do not constitute defamation or invasion of the right of privacy or publicity; and (iv) are not an infringement, of any kind, of the rights of any third party. To the extent that the Copyrightable Materials incorporate any non-original material, the Photographer has obtained all necessary permissions and clearances, in writing, for the use of such non-original material under this Agreement, copies of which shall be provided to the City.

PART II – PRODUCTS

2.1 PHOTOGRAPHIC MEDIA:

- A. Photographic Film: Medium format, 2-1/4 by 2-1/4 inches (60 by 60 mm).
- B. Digital Images:
1. Construction Progress Images: Color images in JPEG format with minimum sensor size of 1.3 megapixels.
 2. Presentation Quality Images: Provide Color images in uncompressed TIFF format, produced by a digital camera with minimum sensor size of 4.0 megapixels, and at an image resolution of not less than 1024 by 768 with 8"x10" original capture at 300 dpi or greater.
- C. Prints:
1. Format: 8-by-10-inch (203-by-254-mm) smooth-surface matte color prints on single-weight commercial-grade stock paper, with 1/2 inch wide margins and punched for standard 3-ring binder.
 2. Identification: On the front of each photograph affix a label in the margin with Project name and date photograph was taken. On the back of each print, provide an applied label or rubber-stamped impression with the following information:
 - a. Project Contract I.D. Number.
 - b. Project Contract Name.
 - c. Name of Contractor. (and Subcontractor Trade Represented)
 - d. Subject of Image Taken.
 - e. Date and time photograph was taken if not date stamped by camera.
 - f. Description of vantage point, indicating location, direction and other pertinent information.
 - g. Unique sequential identifier.
 - h. Name and address of photographer.

PART III – EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS:

- A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
1. Maintain key plan with each set of construction photographs that identifies each photographic location and direction of view.
- B. Film Images:



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1. **Date Stamp:** Unless otherwise indicated, date and time stamp each photograph as it is being taken so stamp is integral to photograph.
 2. **Field Office Prints:** Retain one set of prints of progress photographs in the field office at Project site, available at all times for reference. Identify photographs same as for those submitted to Commissioner.
- C. **Digital Images:** Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
1. **Date and Time:** Include date and time in filename for each image.
 2. **Field Office Images:** Maintain one set of images on CD-ROM in the field office at Project site, available at all times for reference. Identify images same as for those submitted to Commissioner.

3.2 PRE-CONSTRUCTION & PRE-DEMOLITION PHOTOGRAPHS:

- A. Before commencement of Contract work at the site, take color photographs of Project site and surrounding properties, including existing structures or items to remain during construction, from different vantage points, as directed by the Resident Engineer.
1. Flag applicable excavation areas and construction limits before taking construction photographs.
 2. Take photographs of minimum eight (8) views to show existing conditions adjacent to property before starting the Work.
 3. Take applicable photographs of minimum eight (8) views of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
 4. Take additional photographs as required or directed by the Resident Engineer to record settlement or cracking of adjacent structures, pavements, and improvements.
- B. **Demolition Operations:** Take photographs as directed by the Resident Engineer of minimum of eight (8) views each before commencement of demolition operations, at mid-point of operations and at completion of operations.
- C. **Pre-DEMOLITION Photographs:** Take archival quality color photographs, to include all exterior building facades, of all structures at the Project site designated to be fully demolished or removed in compliance with NYC Building Code requirements. Submit four (4) complete sets of pre-demolition photographs, in the format specified herein, to the Resident Engineer for submission to the Department of Buildings.

3.3 PERIODIC CONSTRUCTION PROGRESS PHOTOGRAPHS:

- A. Take photographs of minimum eight (8) views bi-weekly as directed by the Resident Engineer of construction progress for each contract trade. Select vantage points to show status of construction and progress since last photographs were taken.

3.4 SPECIAL PHOTOGRAPHS:

- A. The photographer shall take special photographs of subject matter or events as specified in other sections of the Project Specifications from vantage points specified or as otherwise directed by the Resident Engineer.
- B. **Historical Elements:** As required in Section 01 35 91, HISTORIC TREATMENT PROCEDURES, for Contract work at designated landmark structures the photographer, as specified and required by individual sections of the Contract documents or at the direction of the Commissioner, shall take



images of existing elements scheduled to be removed for replacement, repair or replication in quantities as directed, including post-construction photographs of completed work as directed by the Commissioner.

1. Take Presentation Quality Photographs of designated landmark structures as directed by the Commissioner for submission to the New York City Landmarks Preservation Commission. Provide a minimum of four color photographic prints of each view as directed.

3.5 DVD RECORDING:

- A. When DVD Recording of Demonstration and Orientation sessions is required the GC Contractor shall provide the services of a Videographer as indicated in Section 01 79 00, DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION, and Section 01 91 13 GENERAL COMMISSIONING REQUIREMENTS.

3.6 FINAL COMPLETION CONSTRUCTION PHOTOGRAPHS:

- A. Take color photographs of minimum eight (8) unobstructed views of the completed project or project and site, as directed by the Commissioner and after all scaffolding, hoists, shanties, field offices or other temporary work has been removed and final cleaning is done after date of Substantial Completion for submission as Project Record Documents. Submit four (4) sets of each view of Presentation Quality photographic prints including negatives and/or digital images electronic file

END OF SECTION 01 32 33



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Division 01 – DDC STANDARD GENERAL CONDITIONS
MULTIPLE CONTRACT PROJECTS
Issue Date - January 15, 2015

NO TEXT

PHOTOGRAPHIC DOCUMENTATION
01 32 33 - 6



**SECTION 01 33 00
SUBMITTAL PROCEDURES**

PART I – GENERAL:

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract]

1.2 SUMMARY:

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Coordination Drawings, Catalogue Cuts, Material Samples and other submittals required by the Contract Documents.
- B. Review of submittals does not relieve the Contractor of responsibility for any Contractor's errors or omissions in such submittals, nor from responsibility for complying with the requirements of the Contract.
- C. Responsibility of the Contractor: The approval of Shop Drawings will be general and shall not relieve the Contractor of responsibility for the accuracy of such Shop Drawings, nor for the proper fitting and construction of the work, nor of the furnishing of materials or work required by the Contract and not indicated on the Shop Drawings. Approval of Shop Drawings shall not be construed as approving departures from the Contract Drawings, Supplementary Drawings or Specifications.
- D. This Section includes the following:
1. Definitions
 2. Submission Procedures
 3. Coordination Drawings
 4. LEED Submittals
 5. Ultra Low Sulfur Diesel Fuel Reporting
 6. Construction Photographs and DVD Recordings
 7. As-Built Documents

1.3 RELATED SECTIONS: Include without limitation the following:

- | | | |
|----|------------------|--|
| A. | Section 01 10 00 | SUMMARY |
| B. | Section 01 31 00 | PROJECT MANAGEMENT AND COORDINATION |
| C. | Section 01 32 00 | CONSTRUCTION PROGRESS DOCUMENTATION |
| D. | Section 01 32 33 | PHOTOGRAPHIC DOCUMENTATION |
| E. | Section 01 77 00 | CLOSEOUT PROCEDURES |
| F. | Section 01 78 39 | CONTRACT RECORD DOCUMENTS |
| G. | Section 01 81 13 | SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS |

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.



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- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.
- C. Submittals: Written and graphic information that requires responsive actions and includes without limitation all shop drawings, product data, letters of certification, tests and other information required for quality control and as required by the Contract Documents.
- D. Informational Submittals: Written information that does not require responsive action. Submittals may be rejected for non-compliance with the Contract.
- E. Shop Drawings: Include drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data, except for coordination drawings, specifically prepared for the project by the Contractor or any subcontractor, manufacturer, supplier or distributor, which illustrates how specific portions of the work shall be fabricated and/or installed.
- F. Coordination Drawings: As required in Section 01 31 00 PROJECT MANAGEMENT AND COORDINATION.
- G. Product Data and Quality Assurance Submittals: Includes manufacturer's standard catalogs, pamphlets and other printed materials including without limitation the following:
 - 1. Catalogue and Product specifications
 - 2. Installation instructions
 - 3. Color charts
 - 4. Catalog cuts
 - 5. Rough-in diagrams and templates
 - 6. Wiring diagrams
 - 7. Performance curves
 - 8. Operational range diagrams
 - 9. Mill reports
 - 10. Design data and calculations
 - 11. Certification of compliance or conformance
 - 12. Manufacturer's instructions and field reports

1.5 INTEGRATED DRAWINGS:

- A. The GC Contractor shall provide to the HVAC Contractor reflected ceiling starting points or plans, showing beam soffits elevations, ceiling heights, roof openings, etc.
- B. The HVAC Contractor shall prepare a 3/8 inch scale drawing or drawings showing ductwork, heating and sprinkler piping. This drawing shall include location of grilles, registers, etc. and access doors in hung ceilings. Location shall be fixed by elevations and dimensions from column center lines and/or walls.
- C. The HVAC Contractor shall prepare and issue a 3/8 inch scale original reproducible drawing or drawings of the above to the GC Contractor and a print of same to the Resident Engineer.
- D. The GC Contractor shall lay out on the original reproducible drawing, the reflected ceiling plan, beam soffit elevations, ceiling heights, roof opening, etc. and issue the original reproducible drawing to the Plumbing Contractor, and a print of same to the Resident Engineer.



- E. The Plumbing Contractor shall lay out on the original reproducible drawing its piping, valves, cleanouts, etc., indicating locations and elevations and shall indicate the necessary access doors, and issue the original reproducible drawing to the Electrical Contractor and print of same to the Resident Engineer.
- F. The Electrical Contractor shall indicate on the original reproducible drawing its fixtures, large conduit runs, clearances, pull boxes, junction boxes, sound system speakers, etc., and issue the original reproducible drawing to the Resident Engineer.
- G. The Resident Engineer will call as many meetings with each Contractor as are necessary to resolve any conflicts that become apparent. The Resident Engineer will call on the services of the Design Consultant where necessary.
- H. Upon resolution of the conflicts, the HVAC Contractor shall provide a reproducible drawing of the coordinated drawing or drawings, which will become the Master Integrated Drawing. The Master Integrated Drawing shall be signed by each Contractor to indicate its acceptance of the arrangement of the work.
- I. A reproducible copy of the Master Integrated Drawing or Drawings will be provided by the HVAC Contractor to each Contractor, the Resident Engineer and to the Design Consultant for information.
- J. Each Contractor shall prepare its Shop Drawings in accordance with the Master Integrated Drawings. No work will be permitted without approved Shop Drawings. It is therefore essential that this procedure be instituted as quickly as possible.
- K. Each Contractor shall be held strictly accountable for cooperation in preparing the Integrated Drawing or Drawings.

1.6 SUBMITTAL PROCEDURES:

- A. Refer to Section 01 35 03 GENERAL MECHANICAL REQUIREMENTS and Section 01 35 06 GENERAL ELECTRICAL REQUIREMENTS for additional submittal requirements involving electrical and mechanical work or equipment of any nature called for the project.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activities, with the Submittal Schedule specified in Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION.
 - 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - 3. The Commissioner reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Submittals Schedule: The Submittals Schedule is set forth in Schedule F, which is included in the Addendum.
- D. Identification: Place a permanent label or title block on each submittal for identification.
 - 1. Indicate name of firm or entity that prepared each submittal on label or title block.
 - 2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Design Consultant.
 - 3. Include the following minimum information on label for processing and recording action taken:
 - a. Project name, DDC Project Number and Contract Number
 - b. Date.



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- c. Name and address of Design Consultant.
- d. Name and address of Contractor.
- e. Name and address of subcontractor.
- f. Name and address of supplier.
- g. Name of manufacturer.
- h. Submittal number or other unique identifier, including revision identifier.
- i. Number and title of appropriate Specification Section.
- j. Drawing number and detail references, as appropriate.
- k. Location(s) where product is to be installed, as appropriate.
- l. Other necessary identification.

E. Transmittal:

1. Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form in triplicate. Transmittals received from sources other than the Contractor will be returned without review. Re-submission of the same drawings or product data shall bear the original number of the prior submission and the original titles.
2. Transmittal Form: Provide locations on form for the following information:
 - a. Project name, DDC Project number and Contract Number
 - b. Date
 - c. Destination (To:).
 - d. Source (From:)
 - e. Names of Contractor, subcontractor, manufacturer, and supplier
 - f. Category and type of submittal.
 - g. Submittal purpose and description.
 - h. Specification Section number and title.
 - i. Drawing number and detail references, as appropriate.
 - j. Transmittal number, numbered consecutively.
 - k. Submittal and transmittal distribution record.
 - l. Remarks.
 - m. Signature of transmitter.

F. Shop Drawings:

1. Procedures for Preparing, Forwarding, Checking and Returning all Shop Drawings shall be, generally, as follows:
 - a. Each Contractor shall make available to its subcontractors the necessary Contract Documents and shall instruct such subcontractors to determine dimensions and conditions in the field, particularly with reference to coordination between the trade subcontractors. The Contractor shall direct its subcontractors to prepare Shop Drawings for submission to the Design Consultant in accordance with the requirements of these General Conditions. The Contractor shall also direct its subcontractors to "Ring Up" corrections made on all re-submissions for approval, so as to be readily seen, and that the symbol "sub" be used to identify the source of the correction or information that has been added.

The Contractor shall:

1. Review and be responsible to the Commissioner, for information shown on its subcontractor's Shop and Installation drawings and manufacturers' data, and also for conformity to Contract Documents.
2. "Ring Up" corrections made on all submissions for approval, so as to be readily seen, and that the symbol "GC", "PL", "HVAC" or "EL" be used to indicate that the correction and/or information added was made by the Contractor and/or its subcontractor(s).



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3. Clearly designate which entity is to perform the work when the term, "work by others" or other similar phrases are indicated on the Contract Drawings before submission to the Design Consultant.
 4. Stamp submissions "Recommended for Acceptance", date and forward to the Design Consultant.
2. Each Contractor shall promptly prepare and submit project specific layout detail and Shop Drawings of such parts of the work as are indicated in the Specifications, Schedule F of the Addendum or as required. These Shop Drawings shall be made in accordance with the Contract Drawings, Specifications and Supplementary Drawings, if any. The Shop Drawings shall be accurate and distinct and give all the dimensions required for the fabrication, erection and installation of the work.
3. Size of Drawings: The Shop Drawings, unless otherwise directed, shall be on sheets of the same size as the Contract Drawings, drawn accurately and of sufficient scale to be legible, with a one half (1/2) inch marginal space on each side and a two (2) inch marginal space for binding on the left side.
4. Scope of Drawings: Shop Drawings shall be numbered consecutively and shall accurately and distinctly represent all aspects of the work, including without limitation the following:
 - a. All working and erection dimensions.
 - b. Arrangements and sectional views.
 - c. Necessary details, including performance characteristics, and complete information for making necessary connections with other work.
 - d. Kinds of materials including thickness and finishes.
 - e. Identification of products.
 - f. Fabrication and installation drawings.
 - g. Roughing-in and setting diagrams.
 - h. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
 - i. Shop work manufacturing instructions.
 - j. Templates and patterns.
 - k. Schedules.
 - l. Design calculations.
 - m. Compliance with specified standards.
 - n. Notation of coordination requirements.
 - o. Notation of dimensions established by field measurement.
 - p. Relationship to adjoining construction clearly indicated.
 - q. Seal and signature of professional engineer if specified.
 - r. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
 - s. All other information necessary for the work and/or required by the Commissioner.
5. Titles and Reference: Shop Drawings shall be dated and contain:
 - a. Name of the Project, DDC Project Number and Contract Number.
 - b. The descriptive names of equipment, or materials covered by the Contract Drawings and the classified item number or numbers, if any, under which it is, or they are required.
 - c. The locations or points and sequence at which materials, or equipment, are to be installed in the work.
 - d. Cross references to the section number, detail number and paragraph number of the Contract Specifications.
 - e. Cross references to the sheet number, detail number, etc., of the Contract Drawings.
6. Field Measurements: In addition to the above requirements, the Shop Drawings shall be signed by the Contractor responsible for preparation of the shop drawings and, if applicable, the subcontractor responsible for preparation of the Shop Drawings. Each Shop Drawing shall be stamped with the following wording:



FIELD MEASUREMENTS: The Contractor certifies that it has verified and supplemented the Contract Drawings by taking all required field measurements, which said measurements correctly reflect all field conditions and that this Shop Drawing incorporates said measurements.

7. **Contractor's Statement with Submittal:** Any Submittal by the Contractor for acceptance, including without limitation, all dimensional drawings of equipment, blueprints, catalogues, models, samples and other data relative to the equipment, the materials, the work or any part thereof, must be accompanied by a statement that the Submittal has been examined by the Contractor and that everything shown in the Submittal is in accordance with the requirements of the Contract Drawings and Specifications. If there is any discrepancy between what is shown in the Submittal and the requirements of the Contract Drawings and Specifications, the Contractor shall, in its statement, list and clearly describe each such discrepancy.

Acceptance will be given based upon the Contractor's representation that what is shown in the Submittal is in accordance with the requirements of the Contract Drawings and Specifications. If the Contractor's statement indicates any discrepancy between what is shown in the Submittal and the requirements of the Contract Drawings and Specifications, such change is subject to review and prior written acceptance by the Design Consultant. In addition, such change may require a change order in accordance with Article 25 of the Contract. In the event any such change is approved, any additional expense or increased cost in connection with the change is the sole responsibility of the Contractor.

8. **Submission of Shop Drawings:**
- a. **Initial Submission:** Each Contractor shall submit seven (7) copies of each Shop Drawing to the Design Consultant for his/her review and acceptance. The Design Consultant will transmit Shop Drawings to appropriate sub-consultants for review and acceptance, including Commissioning Authority/Agent as applicable. A satisfactory Shop Drawing will be stamped "No Exceptions Taken", be dated and distributed by the Design Consultant as follows:
- 1) Two (2) copies thereof will be returned to the Contractor by letter.
 - 2) Three (3) copies of the approved Shop Drawing and copy of the transmittal letter to the Contractor will be forwarded to DDC.
 - 3) One copy will be retained by the Design Consultant.
 - 4) One copy will be forwarded / retained by sub-consultant(s) as appropriate.
- Should the Shop Drawing(s) be "Rejected" or noted "Revise and Resubmit" by the Design Consultant, the Design Consultant will return the Shop Drawings to the Contractor with the necessary corrections and changes to be made as indicated thereon.
- b. **Revisions:** Each Contractor must make such corrections and changes and again submit seven (7) copies of each shop drawing to the Design Consultant. The Contractor shall revise and resubmit the Shop Drawing as required by the Design Consultant until the Shop Drawings are stamped "No Exceptions Taken". However, Shop Drawings which have been stamped "Make Corrections Noted" shall be considered an "Acceptable" Shop Drawing and NEED NOT be resubmitted.
- c. **Commencement of Work:** No work or fabrication called for by the Shop Drawings shall be done until the acceptance of the said drawings by the Design Consultant is given. In addition to the foregoing Shop Drawing transmissions, a copy of any Shop Drawing prepared by any of the Contractors or the Contractor's subcontractors which Shop Drawing indicated work related to, adjacent to, impinging upon, or affecting work to be done by other subcontractors shall be transmitted to the Contractor and subcontractors so affected. [These accepted Shop Drawings shall be distributed to the affected Contractor and subcontractors when required with a copy of the transmittal to the Resident Engineer.]



- d. Variations: If the Shop Drawings show variations from the Contract requirements because of standard shop practice or other reasons, the Contractor shall make specific mention of such variations in its letter of submittal. Acceptance of the Shop Drawings shall constitute acceptance of the subject matter thereof only and not of any structural apparatus shown or indicated.
- G. Product Data:
1. General: Except as otherwise prescribed herein, the submission, review and acceptance of Product Data and Catalogue cuts shall conform to the procedures specified in Sub-Section 1.6 F, Shop Drawings.
 2. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
 3. Mark each copy of each submittal to show which products and options are applicable.
 4. Include the following information, as applicable:
 - a. Manufacturer's written recommendations.
 - b. Manufacturer's product specifications.
 - c. Manufacturer's installation instructions.
 - d. Standard color charts.
 - e. Manufacturer's catalog cuts.
 - f. Wiring diagrams showing factory-installed wiring.
 - g. Printed performance curves.
 - h. Operational range diagrams.
 - i. Mill reports.
 - j. Standard product operation and maintenance manuals.
 - k. Compliance with specified referenced standards.
 - l. Testing by recognized testing agency.
 - m. Application of testing agency labels and seals.
 - n. Notation of coordination requirements.
 5. Submit Product Data before or concurrent with Samples.
 6. Submission of Product Data:
 - a. Initial Submission: Each Contractor shall submit seven (7) sets of Product Data to the Design Consultant for his/her review and acceptance. The Design Consultant will transmit Product Data to appropriate sub-consultants for review and acceptance, including Commissioning Authority/Agent as applicable. A satisfactory catalogue cut will be stamped "No Exception Taken", be dated and distributed as follows:
 - 1) Two (2) copies thereof will be returned to the Contractor by letter.
 - 2) Three (3) copies of the Product Data and copy of the transmittal letter to the Contractor will be forwarded to DDC
 - 3) One copy will be retained by the Design Consultant.
 - 4) One copy will be forwarded / retained by sub-consultant(s) as appropriate.Should the Product Data be "Rejected" or noted "Revise and Resubmit" by the Design Consultant, the Design Consultant will return one (1) set of such Product Data to the Contractor with the necessary corrections and changes to be made indicated and one (1) set to DDC.
 7. Revisions: Each Contractor must make such corrections and changes and again submit seven (7) copies of each Product Data for the review of the Design Consultant. The Contractor shall revise and resubmit the Product Data as required by the Design Consultant until the submission is



stamped "No Exceptions Taken" by the Design Consultant. However, Product Data which has been stamped "Make Corrections Noted" shall be considered an "Accepted" Product Data and NEED NOT be resubmitted.

H. Samples of Materials:

1. For samples of materials involving electrical work of any nature, refer to Section 00 35 06 - General Electrical Requirements.
2. Samples shall be in triplicate, of sufficient size to show the quality, type, range of color, finish and texture of the material.
3. Each of the samples shall be labeled as follows:
 - a. Name of the Project, DDC Project Number and Contract Number.
 - b. Name and quality of the material.
 - c. Date.
 - d. Name of Contractor, subcontractor, manufacturer and supplier.
 - e. Related Specification or Contract Drawing reference to the samples submitted.
4. A letter of transmittal, in triplicate, from the Contractor requesting acceptance must accompany all such samples.
5. Transportation charges to the Design Consultant's office must be prepaid on all samples forwarded.
6. Samples for testing purposes shall be as required in the Specifications.
7. Samples on Display: When samples are specified to be equal to approved product, they shall be carefully examined by the Contractor and by those whom the Contractor expects to employ for the furnishing of such materials.
8. Timely Submissions Log/Schedule: Samples shall be submitted in accordance with approved Shop Drawing log so as to permit proper consideration without delaying any operation under the project. Materials should not be ordered until acceptance is received, in writing, from the Design Consultant. All materials shall be furnished equal in every respect to the accepted samples.
9. The Acceptance of any samples will be given as promptly as possible, and shall be only for the characteristic color, texture, strength, or other feature of the material named in such approval, and no other. When this approval is issued by the Design Consultant, it is done with the distinct understanding that the materials to be furnished will fully and completely comply with the Specifications, the determination of which may be made at some later date by a laboratory test or by other procedure. Use of materials will be permitted only so long as the quality remains equal to the approved samples and complies in every respect with the Specifications, and the colors and textures of the samples on file in the office of the Design Consultant, for the project.
10. Acceptability of test Data: The Commissioner will be the final judge as to acceptability of laboratory test data and performance in service of materials submitted.
11. Valuable Samples: Valuable samples, such as hardware, plumbing and electrical fixtures, etc., not destroyed by inspection or test, will be returned to the Contractor and may be incorporated into the work after all questions of acceptability have been settled, providing suitable permanent records are made as to the location of the samples, their properties, etc.
12. Equivalent Quality: Any material, article and/or equipment which is designated in the Drawings and/or Specifications by a number in the catalogue of any manufacturer or by a manufacturer's grade or trade name is designated for the purpose of describing the material, article and/or equipment and fixing the standard of performance and/or function, as well as the quality and/or finish. Any material, article and/or equipment which is other than what is specified in the Drawings



and/or Specifications will only be accepted if the Commissioner makes a written determination that such material, article and/or equipment is equivalent to that which is specified in the Drawings and/or Specifications.

13. The submission of any material, article and/or equipment as the equal of any material, article and/or equipment set forth in the Drawings and/or Specifications as a standard shall be accompanied by any and all information essential for determining whether such proposed material, article and/or equipment is equivalent to that which is specified. Such information shall include, without limitation, illustrations, drawings, descriptions, catalogues, records of tests, samples, as well as information regarding the finish, durability and satisfactory use of such proposed material, article and/or equipment under similar operating conditions.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 1.7

1.7 LEED SUBMITTALS:

- A. Comply with submittal requirements specified in Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL; Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS; Section 01 81 13.13, VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS FOR LEED BUILDINGS; Section 01 81 19, INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS and Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS.
- B. LEED Building submittal information shall be assembled into one package per each applicable specification section, separate from all other non-LEED submittals. Each submittal package shall have a separate transmittal and identification as described in Sub-Section 1.6 herein.
- C. Number of Copies: Submit FOUR (4) copies of LEED submittals, in accordance with procedure described in Sub-Section 1.6 herein, unless otherwise indicated.
- D. Material Safety Data Sheets (MSDSs) for LEED Certification: Submit information necessary to show compliance with LEED certification requirements, which will be the limit of the Design Consultant's review for LEED compliance.
 1. Designated LEED submittals that include non-LEED MSDS data will not be reviewed. The entire submittal will be returned for re-submission.

1.8 ULTRA LOW SULFUR DIESEL FUEL AND BEST AVAILABLE TECHNOLOGY REPORTING:

- A. In accordance with Section 01 10 00 Summary, Sub-Section 1.13E, each Contractor shall submit reports to the Commissioner regarding the use of Ultra Low Sulfur Diesel Fuel and Best Available Technology (BAT) in Non road Vehicles. Submission of such reports shall be in accordance with the schedule, format, directions and procedures established by the Commissioner.

1.9 CONSTRUCTION PHOTOGRAPHS AND DVD RECORDINGS:

- A. Submit construction progress photographs and DVD recordings in accordance with requirements of Section 01 32 33, PHOTOGRAPHIC DOCUMENTATION



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1.10 AS-BUILT DOCUMENTS:

- A. Submit all as-built documents in accordance with Section 01 78 39 CONTRACT RECORD DOCUMENTS.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 33 00

SUBMITTAL PROCEDURES
01 33 00 - 10



SECTION 01 35 03
GENERAL MECHANICAL REQUIREMENTS

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 35 03

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract]

1.2 SUMMARY:

- A. The General Mechanical Requirements contained herein shall be followed by all Contractors furnishing mechanical equipment under their respective contracts. This Section sets forth the General Requirements applicable to mechanical work for the Project. Such requirements are intended to be read in conjunction with the Specifications and Contract Drawings for the Project. In the event of any conflict between the requirements set forth in this Section and the requirements of the Specifications and/or the Contract Drawings, whichever requirement is the most stringent, as determined by the Commissioner, shall take precedence.

1.3 RELATED SECTIONS: Include without limitation the following:

- | | | |
|----|------------------|---------------------------------|
| A. | Section 01 10 00 | SUMMARY |
| B. | Section 01 33 00 | SUBMITTAL PROCEDURES |
| C. | Section 01 35 06 | GENERAL ELECTRICAL REQUIREMENTS |
| D. | Section 01 42 00 | REFERENCES |
| E. | Section 01 77 00 | CLOSEOUT PROCEDURES |
| F. | Section 01 78 39 | CONTRACT RECORD DOCUMENTS |

1.4 DEFINITIONS:

- A. **CONCEALED PIPING AND DUCTS** - shall mean piping and ducts hidden from sight in masonry or other construction, in floor fill, trenches, partitions, hung ceilings, furred spaces, pipe shafts and in service tunnels not used for passage. Where piping and ducts run in areas that have hung ceilings, such piping and ducts shall be installed in the hung ceilings. For work on existing piping any insulation on such existing piping is to be tested for asbestos and abated, if found to be positive by a certified asbestos contractor. Such testing and abatement shall occur prior to the performance of any work on these pipes.

1.5 SUBMITTALS:

- A. **INTENT OF MECHANICAL CONTRACT DRAWINGS** – Mechanical Contract Drawings are in part diagrammatic and show the general arrangement of the equipment, ducts and piping included in the Contract and the approximate size and location of the equipment.
- B. The HVAC Contractor shall follow these Contract Drawings in laying out the work and verify the spaces in which it will be installed. The HVAC Contractor shall submit, as directed, Mechanical Shop Drawings, roughing drawings, manufacturer's Shop Drawings, field drawings, cuts, bulletins, etc., of all materials, equipment and methods of installation shown or specified in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.



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1. Submit sheet metal shop standards. Submit manufacturer's product data including gauges, materials, types of joints, scaling materials and installations for metal ductwork materials and products.
2. Submit scaled layout drawing (3/8"=1') of metal ductwork and fittings including, but not limited to, duct sizes, locations, elevations, slopes of horizontal runs, wall and floor penetrations and connections. Show modifications of indicated requirements made to conform to local shop practice and how those modifications ensure that free area, materials and rigidity are not reduced. Layouts should include all the room plans, mechanical equipment rooms and penthouses. Method of attachment of duct hangers to building construction all with the support details. Coordinate shop drawings with related trades prior to submission.
3. Indicate duct fittings, particulars such as gauges, sizes, welds and configuration prior to start of work for low-pressure systems.
4. Submit maintenance data and parts lists for metal ductwork materials and products. Include this data, product data and shop drawings in maintenance manual.

1.6

ACCESSIBILITY:

All work shall be installed by the HVAC Contractor so as to be readily accessible for inspection, operation, maintenance and repair. Minor deviations from the arrangement indicated on the Contract Drawings may be made to accomplish this, but they shall not be made without approval by the Commissioner.

1.7

CHANGES IN PIPING, DUCTS, AND EQUIPMENT:

Wherever field conditions are such that for proper execution of the work, reasonable changes in location of piping, ducts and equipment are necessary and required, the HVAC Contractor shall make such changes as directed and approved, without extra cost to the City.

1.8

CLEANING OF PIPING, DUCTS, AND EQUIPMENT:

Piping, ducts and equipment shall be thoroughly cleaned by the HVAC Contractor of all dirt, cuttings and other foreign substances. Should any pipe, duct or other part of the several systems be obstructed by any foreign matter, the HVAC Contractor will be required to pay for disconnecting, cleaning and reconnecting wherever necessary for the purpose of locating and removing obstructions. The Contractor shall pay for repairs to other work damaged in the course of removing obstructions. For work on existing piping, ducts and equipment the HVAC Contractor shall pay special attention during this task so as not to disturb the insulation on such piping, ducts or equipment.

1.9

STANDARDIZATION OF SIMILAR EQUIPMENT:

Unless otherwise particularly specified, all equipment of the same kind, type or classification, and used for identical purposes, shall be the product of one (1) manufacturer.

1.10

SUPPORTING STRUCTURES DESIGNED BY THE CONTRACTOR:

Unless otherwise specified, supporting structures for equipment to be furnished by the HVAC Contractor shall be designed by an Engineer licensed in New York State retained by the GC Contractor. Supporting structures shall be built by the GC Contractor of sufficient strength to safely withstand all stresses to which they may be subjected, within permissible deflections, and shall meet the following standards:

- A. Structural Steel - ASTM Standard Specifications, AISC and New York City Construction Codes.
- B. Concrete for supports for equipment shall conform to the Specifications for concrete herein, but in no case shall be less than the requirements of the New York City Construction Codes for average concrete.



- C. Steel reinforcement for concrete shall be of intermediate grade and shall meet the requirements of the Standard Specifications for Billet Steel-Concrete Reinforcement Bars, ASTM.
- D. Drawings and calculations shall be submitted for review and acceptance in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

1.11 ELIMINATION OF NOISE:

- A. All systems and/or equipment provided under the Contract shall operate without objectionable noise or vibration.
- B. Should operation of any one or more of the several systems produce noise or vibration which is, in the opinion of the Commissioner, objectionable, the HVAC Contractor shall at its own expense make changes in piping, equipment, etc. and do all work necessary to eliminate objectionable noise or vibration.
- C. Should noise or vibration found objectionable by the Commissioner be transmitted by any pipe or portions of the structure from systems and/or equipment installed under the Contract, the HVAC Contractor shall at its own expense install such insulators and make such changes in or additions to the installations as may be necessary to prevent transmission of this noise or vibration.

1.12 PRELIMINARY FIELD TEST:

As soon as conditions permit, the HVAC Contractor shall furnish all necessary labor and materials for, and shall make, preliminary field tests of the equipment to ascertain compliance with the requirements of the Contract. If the preliminary field tests disclose equipment that does not comply with the Contract, the HVAC Contractor shall, prior to the acceptance test, make all changes, adjustments and replacements required.

1.13 INSTRUCTIONS ON OPERATION:

At the time the equipment is placed in permanent operation by the City, the HVAC Contractor shall make all adjustments and tests required by the Commissioner to prove that such equipment is in proper and satisfactory operating condition. The HVAC Contractor shall instruct the City's operating personnel on the proper maintenance and operation of the equipment for the period of time called for in the Specifications.

1.14 CERTIFICATES:

On completion of the work, the HVAC Contractor shall obtain certificates of inspection, approval, acceptance and of compliance with all laws from all agencies and/or entities having jurisdiction over the work and shall deliver these certificates to the Commissioner in accordance with Section 01 77 00 CLOSEOUT PROCEDURES. The work shall not be deemed substantially complete until the certificates have been delivered.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 35 03



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
MULTIPLE CONTRACT PROJECTS
Issue Date - January 15, 2015

NO TEXT

GENERAL MECHANICAL REQUIREMENTS
01 35 03 - 4



SECTION 01 35 06
GENERAL ELECTRICAL REQUIREMENTS

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract]

1.2 SUMMARY:

- A. This Section sets forth the General Requirements applicable to electrical work for the Project. Such requirements are intended to be read in conjunction with the Specifications and Contract Drawings for the Project. In the event of any conflict between the requirements set forth in this Section and the requirements of the Project Specifications and/or the Contract Drawings, whichever requirement is the most stringent, as determined by the Commissioner, shall take precedence.
- B. This Section includes the following:
1. Procedure for Electrical Approval
 2. Submittals
 3. Electrical Installation Procedures
 4. Electrical Conduit System Including Boxes (Pull, Junction and Outlet)
 5. Electrical Wiring Devices
 6. Electrical Conductors and Terminations
 7. Circuit Protective Devices
 8. Distribution Centers
 9. Motors
 10. Motor Control Equipment
 11. Schedule of Electrical Equipment

1.3 RELATED SECTIONS: Include without limitation the following:

- | | | |
|----|------------------|---------------------------------|
| A. | Section 01 10 00 | SUMMARY |
| B. | Section 01 33 00 | SUBMITTAL PROCEDURES |
| C. | Section 01 35 03 | GENERAL MECHANICAL REQUIREMENTS |
| D. | Section 01 42 00 | REFERENCES |
| E. | Section 01 77 00 | CLOSEOUT PROCEDURES |
| F. | Section 01 78 39 | CONTRACT RECORD DOCUMENTS |

1.4 DEFINITIONS:

- A. **WIRING:** means both wire and raceway (rigid steel, heavy wall conduit unless specifically indicated otherwise).



- B. **POWER WIRING:** means wiring from a panelboard or other specified source to a starter (if required) then to a disconnect (if required), then to the final point of usage such as a motor, unit or device.
- C. **CONTROL and/or INTERLOCK WIRING:** means that wiring that signals the device to operate or shut down in response to a signal from a remote control device such as a temperature, smoke, pressure, float, etc. device (starters and disconnect switches are not included in this definition) regardless of the voltage required for the controlling device.
- D. **RIGID STEEL CONDUIT:** shall mean rigid steel, heavy wall conduit that is hot dipped galvanized inside and outside. The conduit shall meet the requirements of the latest edition, as amended, of the "Standard for Rigid Steel Conduit" of the Underwriters' Laboratories, Inc. Unless otherwise specified in the Specifications or indicated on the Contract Drawings, rigid steel conduit shall be used for all exposed work, for all underground conduits in contact with earth and for fire alarms systems, as required by the New York City Construction Codes.
- E. **ELECTRICAL METALLIC TUBING (EMT):** shall mean industry standard thin wall conduit of galvanized steel only. All elbows, bends, couplings and similar fittings which are installed as a part of the conduit system shall be compatible for use with electric metallic tubing. Couplings and terminating fittings shall be of the pressure type as approved by the Commissioner. Set screw fittings will not be acceptable. EMT shall meet the requirements of the latest edition, as amended, of the "Standard for Electrical Metallic Tubing of the Underwriters Laboratories Inc." EMT may only be used where specifically indicated. In no case will EMT be permitted in spaces other than hung ceilings and dry wall partitions.
- F. **FLEXIBLE METALLIC CONDUIT (FMC):** Shall mean a conduit made through the coiling of a self interlocking ribbed strip of aluminum or steel, forming a hollow tube through which wires can be pulled. For final connections to motors and motorized equipment, not more than a 4' - 0" length of flexible conduit may be used. For watertight installations, this conduit shall be of a watertight type, attached with watertight glands or fittings for final connections from outlet box to recessed lighting fixtures and in locations only where specifically permitted by the Specifications or Contract Drawings.

1.5 **PROCEDURE FOR ELECTRICAL APPROVAL:**

This Sub-Section sets forth General Electrical information, as well as required approvals for all electrical work required for the Project, including ancillary electrical work which may be included in the work for other than the Contract for Electrical Work.

- A. **ELECTRIC SERVICE:** The electric service supply is subject to commercial and operating variation of the utility company. Proper provision shall be made to have all apparatus operate normally under these conditions.
- B. **ACCEPTANCE:** Acceptance and approval of the work will be contingent upon the inspection and test of the installation by the City regulatory agency.
- C. **TESTS:** The Electrical Contractor shall notify the Commissioner when the Electrical Contractor has completed the work and is ready to have it inspected and tested. Upon completion of the work tests shall be made as required by the Commissioner of all electrical materials, electrical and associated mechanical equipment, and of appliances installed hereunder. The Electrical Contractor shall furnish all labor and material for such tests. Should the tests show that any of the material, appliances or workmanship is not first class or not in compliance with the Contract, the Electrical Contractor on written notice shall remove and promptly replace them with other materials in conformity with the Contract.
- D. **CERTIFICATE OF THE BUREAU OF ELECTRICAL CONTROL, OF THE DEPARTMENT OF BUILDINGS (B.E.C.):** The Electrical Contractor must file prior to requesting a substantial completion inspection a Certificate of Inspection issued by B.E.C. On completion of the work the Electrical Contractor shall obtain certificates of inspection, approval, acceptance and compliance from all agencies and/ or



entities having jurisdiction over the work and shall deliver these certificates to the Commissioner in accordance with Section 01 77 00 CLOSEOUT PROCEDURES.

E. RESPONSIBILITY FOR CARE AND PROTECTION OF EQUIPMENT:

1. Any Contractor furnishing any equipment shall be responsible for the equipment until it has been finally inspected, tested and accepted, in accordance with the requirements of the Contract.
2. After delivery and before and after installation, such Contractor shall protect all equipment against theft, injury or damage from all causes. Such Contractor shall carefully store all equipment received for work, which is not immediately installed. If any apparatus has been subject to possible injury by water, it shall be thoroughly dried out and put through a special dielectric test as directed by the Commissioner, at the expense of such Contractor or replaced by such Contractor without additional cost to the City.

F. UNIFORMITY OF EQUIPMENT: Any two (2) or more pieces of equipment, apparatus or materials of the same kind, type or classification which are intended to be used for identical types of service, shall be made by the same manufacturer.

1.6 SUBMITTALS:

A. CONTRACTOR'S ELECTRICAL DRAWINGS AND SAMPLES FOR APPROVAL:

1. The Electrical Contractor shall submit to the Commissioner for approval, in accordance with Section 01 33 00 SUBMITTAL PROCEDURES, complete dimensional drawings of all equipment, wiring diagrams, motor test data, details of control, installation layouts showing all details and locations and including all schedules, and descriptions and supplementary data to comprise complete working drawings and instructions for the performance of the work. A description of the operation of the equipment and controls shall be included. A letter, in triplicate, shall accompany each submittal.
2. The Electrical Contractor shall submit in accordance with Section 01 33 00 SUBMITTAL PROCEDURES, duplicate samples of such materials and appliances as may be requested by the Commissioner for approval. These samples shall be properly tagged for identification and submitted for examination and test. After the samples are approved, one (1) sample will be returned to the Contractor and the other sample will be filed in the office of the Commissioner's representative for inspection use. After the Contract is completed, the second set of samples will be returned to the Contractor.

B. TIMELINESS: All material shall be submitted in accordance with the submittal schedule in sufficient time for the progress of construction. Failure to promptly submit acceptable samples and dimensional drawings of equipment will not be accepted as grounds for an extension of time. The Commissioner may decline to consider submittals unless all related items are submitted at the same time.

C. CONTRACTOR'S STATEMENT WITH SUBMITTALS: Contractor shall submit statement in accordance with Section 01 33 00, SUBMITTAL PROCEDURES.

D. BULLETINS AND INSTRUCTIONS: The Electrical Contractor shall furnish and deliver to the Commissioner in accordance with Section 01 78 39, CONTRACT RECORD DOCUMENTS and Section 01 77 00, CLOSEOUT PROCEDURES, after acceptance of the work, four (4) complete sets of instructions, technical bulletins and any other printed matter (diagrams, prints, or drawings) required to provide complete information for the proper operation, maintenance and repair of the equipment and the ordering of spare parts.



PART II – PRODUCTS (Not Used)

PART III – EXECUTION

3.1 ELECTRICAL INSTALLATION PROCEDURES:

This Sub-Section sets forth the General Installation Procedure that shall apply to all electrical work and electrical equipment appearing in the Contracts.

(Refer to Sub-Section 1.4 DEFINITIONS for terms used in this section)

- A. **INTENT OF CONTRACT DOCUMENTS:** The Drawings and Specifications are to be interpreted as a means of conveying the scope and intent of the work without giving every minor electrical detail. It is intended, nevertheless, that each Contractor shall provide whatever labor and materials are found necessary, within the scope of its Contract, for the successful operation of the installation. Specific details of individual installations are to be finally decided upon when the Contractor submits Working or Shop Drawings for approval to DDC. Whenever there are two (2) or more methods to complete project work within the Contract scope, the Commissioner reserves the right to choose that method which, in the Commissioner's opinion, will afford the most satisfactory performance, lasting qualities, and accessibility for repairs, even though this selection is the most costly.
- B. **SCHEMATIC PLANS – APPROXIMATE LOCATIONS:** Conduits and wiring are shown on the plans for diagrammatic purposes only. Therefore, conduit layouts may not necessarily give the actual physical route of the conduits. The Contractor who installs a conduit system will also be required, as part of the work, to furnish and install all hangers and pull-boxes, including any special pull-boxes found necessary to overcome interferences, and to facilitate the pulling of electrical cables. Similarly, the locations of equipment, appliances, outlets and other items shown on Contract Drawings are only approximate and are to be definitively established when equipment Shop Drawings are submitted and approved by DDC during construction.
- C. **SLEEVES:** required for conduits passing through walls or floors, shall be furnished and set by the Contractor installing the conduits. Sleeves in waterproofed floors shall be provided with flashing extending 12 inches in all directions from sleeve and secured to waterproofing. Flashing shall be turned down into space between pipe and sleeve and caulked watertight. Flashing shall be 20 oz. cold rolled copper. Sleeves shall be supplied with welded flanges similar to those supplied by the Plumbing Contractor and shall extend one (1) inch above finished floor.
- D. **COORDINATION:** Each Contractor shall keep in close touch with the construction progress and obtain the necessary information for the accurate placement of its work in ample time before project construction operations obstruct its work. Each Contractor is to consult all other Contract Drawings, as well as approved equipment Shop Drawings on file in the Resident Engineer's Field Office. This will aid in avoiding interferences, omissions and errors in the electrical installation.
- E. **RESTORATION:** If drilling or cutting is done on finished surfaces of equipment or the structure, any marring of the surface shall be repaired or replaced by the Contractor who caused the damage. Each Contractor shall be held responsible for corrective restoration due to its cutting or drilling, and for any damage to the project or its contents caused by the Contractor or the Contractor's workers. Any Contractor who pierces waterproofing because of the installation of their work shall, at their own expense, restore the waterproofing to the satisfaction of the Commissioner.
- F. **ELECTRICAL WORK AT SITE:** Any Contractor who is required to furnish equipment consisting of a number of related electrical devices or appliances, mounted in a single enclosure, or on a common base,



shall furnish this unit complete with internal wiring, connections, terminal boxes with copper connectors and/or lugs and ample electrical leads, ready for connection and operation. The cost of any wiring, re-wiring or other work required to be done on this unit in the field, shall be borne by the Contractor who furnished the unit, without additional cost to the City.

- G. **COOPERATION AMONG CONTRACTORS:** Whenever an electrically operated unit or system involves the combined work of several Contractors for its installation and successful operation, each Contractor shall exercise the utmost diligence in cooperating with others to produce a complete, harmonious installation.
- H. **WORK BY CONTRACTORS FURNISHING ELECTRICAL EQUIPMENT:** Any Contractor who furnishes an electrically operated or motorized unit of equipment shall install same and, as part of its Contract, perform the following work in connection therewith:
1. **FOUNDATIONS:** Unless otherwise specified or indicated, the Contractor furnishing electrically operated equipment shall also furnish and install approved foundations for same. Special foundations, if required, will be described in the detailed Specification and/or in the Drawings.
 - a. **MATERIAL** - All foundations, unless required otherwise, shall rest on a structural slab and shall be of poured concrete, of a mixture specified for reinforced concrete. Foundations shall present a neat, smooth appearance without voids, sharp corners or edges.
 - b. **DIMENSIONS:** Foundation dimensions, height above floor, methods of setting, aligning and anchoring of equipment shall be as recommended by the manufacturer of equipment and approved by the Commissioner. The minimum height of foundations above finished floor shall be four (4) inches and foundations shall extend at least six (6) inches at all sides beyond the base plates of equipment.
 2. At least one (1) inch of grout shall be applied under the equipment base plate after placement and alignment of the equipment.
 3. **ITEMS:** Anchor plates, bolts, sleeves, nuts and washers and other necessary items for proper installation of equipment shall be provided. The Contractor shall also furnish and set required templates to locate accurately the positions of the hold down bolts.
 4. **VIBRATION ISOLATION:** If specifically required in the detailed Specifications for a particular unit, vibration isolators shall be provided for rotating equipment.
 5. **SUPPORTS:** If any motorized equipment is required to be mounted overhead or off a wall, the Contractor supplying the unit shall furnish and install a suitable platform, bracket or shelf, whichever is appropriate or specified, and mount the equipment thereon. This support shall be constructed of Galvanized steel members, plates, etc., and the whole securely fastened to the structure or to anchors previously embedded in the wall or slab. In case of excessive vibration transmitted to structure, isolating pads or other devices shall be installed. The Contractor shall apply one (1) coat of approved Galvanized primer paint to the support and one (1) additional coat of approved paint in the field.
 6. **ASSOCIATED EQUIPMENT:** The Contractor who furnishes a motorized or electrically operated unit of equipment shall also furnish all associated motor starters, disconnect means, relays, control devices, lamps, or other devices, necessary for the successful functioning of the unit.
 7. **POINT OF DELIVERY:** Any item specified to be installed by the Contractor for Electrical Work and delivered to the site that cannot be hand carried (due to bulk, weight or timeliness) to the location of its installation is to be delivered and set in place, leveled and secured by the Contractor furnishing the equipment. Such delivery shall be to the location where it is to be installed by the Contractor for Electrical Work.
 8. **CONTROL AND INTERLOCK WIRING:**



- a. General Construction Work and Plumbing Work.
 - (1) All control wiring associated with doors and door hardware is to be furnished and installed, unless otherwise indicated, by the Contractor furnishing the doors. Power for the door operation and for its controls shall be furnished and installed by the Contractor for Electrical Work.
 - (2) All other control wiring associated with equipment furnished by either the Contractor for General Construction Work or the Contractor for Plumbing Work is to be furnished and installed by the Contractor for Electrical Work.
 - b. Contractor for Heating, Ventilating and Air Conditioning Work
 - (1) The furnishing and installing of all control devices and all control and interlock wiring for equipment furnished under the Heating, Ventilating and Air Conditioning Contract shall be by that Contractor, including any power required for any control device.
 - (2) The Contractor for Heating, Ventilating and Air Conditioning Work shall deliver to the Contractor for Electrical Work all starters and disconnect switches specified to be furnished under the Heating, Ventilating and Air Conditioning Contract. The Contractor for Electrical Work is to install the starters and disconnect switches, and furnish and install all power wiring and make connections between the starter, disconnect switch and motor or equipment being served. The motor or equipment is to be mounted by the Contractor furnishing the motor.
9. **INSTALLATION OF BURNER:** The Contractor who furnishes and installs the gas/oil-fired boiler/furnace shall also include as part of its Contract, the work of furnishing, installing and connecting all equipment, controls with necessary conduits and wiring, to a service point provided by the Contractor for Electrical Work. Unless detailed otherwise in the Specifications, the Contractor for Electrical Work shall furnish power from the power source to a junction box furnished and installed by the Contractor for the Electrical Work and located near the boiler/furnace control panel. The Contractor for Electrical Work shall also furnish and install an empty conduit and a junction box to be located at a remote location (outside of the boiler/furnace room) for an emergency shut-off switch. The shut-off switch and all other conduit and wire shall be furnished and installed by the Contractor furnishing the boiler/furnace.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.2

3.2

ELECTRICAL CONDUIT SYSTEM INCLUDING BOXES (PULL, JUNCTION AND OUTLET):

This Sub-Section sets forth the requirements applying to any Contract requiring the installation of electrical conduits, boxes or fittings. Rigid steel conduit shall be used through out, unless otherwise directed by the Commissioner. Where the word 'conduit', without a modifier such as, rigid steel, EMT, etc., is specified to be used, it shall be interpreted to mean, rigid steel, heavy wall, threaded conduit.

(Refer to Sub-Section 1.4 DEFINITIONS for terms used in this section)

A. INSTALLATIONS AND APPLICATIONS:

1. Unless otherwise specified or indicated on the Contract Drawings, conduit runs shall be installed concealed in finished spaces.
2. **CONDUIT SIZES:** The sizes of conduit shall be as indicated on the Contract Drawings. Wherever conduit sizes are not indicated, the conduit shall meet the requirements of the New York City Electrical Code to accommodate the conductors to be installed therein.



3. Conduits shall be reamed smooth after cutting. No running threads will be permitted. Universal type couplings shall be used where required. Conduit joints shall be screwed up to butt. Empty conduits after installation shall have all open ends temporarily plugged to prevent the entrance of water or other foreign matter.
4. Conduits being installed in concrete or masonry shall be securely held in place by the Contractor installing them during pouring and construction operations. A group of conduits terminating together shall be held in place by a template.
5. **UNDERGROUND STEEL CONDUITS:** Unless otherwise specified, all underground steel conduits in contact with earth shall be encased by the Contractor who installs them, in a covering of not less than two (2) inches of an approved concrete mixture. Concrete mix shall be one (1) part cement to four and one-half (4 ½) parts of fine and coarse aggregate.
6. **EXCAVATION RESTORATION PERMITS:** The Contractor installing underground conduits, duct banks or manholes shall perform as part of its contract the work of cutting pavement, excavation shoring, keeping trenches or holes pumped dry, backfilling, restoration of surfaces to original condition and removal of excess earth and rubbish from premises. During the work, the Contractor shall provide adequate crossovers, protective barriers, lamps, flags, etc., to safeguard traffic and the public. When the work is in a public highway or street, the Contractor shall secure and pay for all necessary permits and inspection fees and pay the cost of repaving.
7. **EXPOSED CONDUIT SUPPORTS:** Exposed conduit shall be supported by Galvanized hangers with necessary inserts, beam clamps of approved design or attached to walls or ceilings by expansion bolts. Exposed conduits shall be supported or fastened at intervals not more than five (5) feet.
8. Exposed conduit shall be installed parallel or at right angles to ceiling, walls and partitions. Where direction changes of exposed conduit cannot be made with neat bends, such as required around beams or columns, conduit type fitting shall be used.
9. The conduit shall be installed with an approved expansion joint:
 - a. Wherever the conduit crosses a building expansion joint (the Contractor responsible for furnishing and installing the conduit will be held responsible for determining where the building expansion joints are located):
 - b. Every 200 feet, when in straight runs of 200 feet or longer.
10. Conduit may only enter and leave a floating slab in the vertical direction, and then only in an approved manner. Horizontal entries into floating slabs are not permitted.
11. Conduit installed in pipe shafts shall be properly supported to carry the total weight of the raceway system complete with cable. In addition at least one (1) horizontal brace per 10 ft. section shall be provided to assure stability of the raceway system.
12. **BUSHINGS AND LOCKNUTS:** Approved bushings and locknuts shall be used wherever conduits enter outlet boxes, switch boxes, pull boxes, panel board cabinets, etc.
13. **CONDUIT BENDS:** shall be made without kinking conduit or appreciably reducing the internal diameter. All bends in conduit of two (2) inch in diameter or larger shall be made with a hydraulic or power pipe bender. The radius of the inner edge of any bend shall not be less than six (6) times the internal diameter of the conduit where rubber covered conductors are to be installed, and not less than 10 times the internal diameter of the conduit where lead covered conductors are to be used. Long gradual sweeps will be required, rather than sharp bends, when changes of direction are necessary.



14. EMPTY CONDUITS

- a. **TESTS:** All conduits and ducts required to be installed and left empty shall be tested for clear bore and correct installation by the Contractor who installed them using a ball mandrel and a brush and snake before the installation will be accepted. The ball shall be turned to approximately 85% of the internal diameter of the raceway to be tested. Two (2) short wire brushes shall be included in the mandrel assembly. Snaking of conduits, ducts, etc., shall be performed by the Contractor in the presence of the Resident Engineer. Any conduits or ducts which reject the mandrel shall be cleared at once with the Contractor bearing all costs, such as chopping concrete, to replace the defective conduit and restore the surface to its original condition.
- b. **TAGS:** Numbers or letters shall be assigned to the various conduit runs, and as they test clear they shall be identified by a fiber tag not less than 1- $\frac{1}{4}$ inch width, attached by means of a nylon cord. All conduit terminations in panel, splice or pull boxes as well as those out of the floor or ceiling shall be tagged.
- c. **TEST RECORDS:** As the conduit runs clear, a record shall be kept under the heading of "Empty Conduit Tested, Left Clear, Tagged and Capped" showing conduit designation, diameter, location, date tested and by whom. When complete, this record shall be signed by the Resident Engineer and submitted in triplicate for approval. This record shall be entered on the Contract Record Drawings under Section 01 78 39, CONTRACT RECORD DOCUMENTS.
- d. **CAPPING:** All empty conduit and duct openings, after test, shall be capped or plugged by the Contractor who installed them as directed.
- e. **DRAG LINES:** A drag line shall be left in all empty conduit.

B. BOXES:

1. The Electrical Contractor shall furnish and erect all pull boxes indicated on the plans or where required. Sides, top and bottom of pull boxes shall be Galvanized coated and shall be built of No. 12 USSG steel reinforced at corners by substantial angle irons and riveted or welded to plates. Bottom or side of pull boxes shall be removable and held in place by corrosion resistant machine screws. Pull boxes in damp locations shall have threaded hubs and gaskets and be NEMA 4X. All pull boxes shall be suspended from ceiling or walls in the most substantial manner.
2. In centering outlets, the Electrical Contractor is cautioned to allow for overhead pipes, ducts and other obstructions, and for variations in arrangement and thickness of fireproofing, soundproofing and plastering. Precaution should be exercised regarding the location of window and door trims, paneling, etc. Mistakes resulting from failure to exercise precaution must be corrected by the Contractor at no additional cost to the City. Outlets in hung ceilings shall be supported from the black iron or structure.
3. The exact location of all outlets in finished rooms shall be as directed. When the interior finish has been applied, the Electrical Contractor shall make any necessary adjustment of its work to properly center the outlets. All outlet boxes for local switches near doors shall be located at the strike side of doors as finally hung, whether so indicated on the drawings or not.
4. Exposed wall outlet boxes shall be erected neatly and tight against the walls and securely anchored to same.
5. All wall outlets of each type shall be set accurately at the same level on each floor, except where otherwise specified or directed. Where special conditions occur, outlets shall be located as directed.



6. **MOUNTING HEIGHTS:** The following heights are standard heights and are subject to correction due to coordination with Contract Drawings. All such changes must be approved by the Resident Engineer. Heights given are from finished floor to center line of outlet or device on wall or partition, unless otherwise indicated.
- | | |
|--|------------------------------|
| a. General Convenience Outlets
(mount vertical) | 1'-6" |
| b. Clock Outlets | 8'-6" or 1'-6" below ceiling |
| c. Wall Lighting Switches | 4'-0" |
| d. Motor Controllers | 5'-0" |
| e. Motor Push-button | 4'-2" |
| f. Telephone Outlets | As Directed |
| g. Fire Alarm Bells | 8'-6" or 1'-6" below ceiling |
| h. Fire Alarm Stations | 4'-0" |
| i. Intercom Outlet | 1'-6" |
| j. Cooking and Refrigerator Unit | As Directed |
7. Outlet boxes shall be of approved design and construction; of form and dimensions suited and adapted to its specific location; the kind of fixture to be used and the number and arrangements of conduits, etc., connecting therewith. All ferrous outlet boxes shall meet the requirements for zinc coating as specified under Electrical Conduit Systems.
8. There shall be knockouts opened only for the insertion of conduit. Any outlet boxes with more openings than are necessary for conduit insertion shall be sealed by the Electrical Contractor without additional charge.
9. All outlet boxes and junction boxes for exposed work shall be galvanized cast iron or cast aluminum with threaded openings. Outlet boxes for exposed inside work in damp locations shall be galvanized cast iron or cast aluminum with threaded hubs and neoprene gaskets.
10. Junction boxes shall not be less than 4 11/16" square and shall be equipped with zinc coated plates. Where plates are exposed they shall be finished to match the room decor.
11. **FIXTURE SUPPORTS:** Outlet boxes supporting lighting fixtures shall be equipped with fixture studs held by approved galvanized stove bolts or integral with the box. Cast iron or malleable boxes shall have four (4) tapped holes for mounting required cover or fixtures.
12. Outlet boxes exposed to the weather or indicated W.P., shall be cast iron or cast aluminum and the covers made watertight with neoprene gaskets. The boxes shall have external lugs for mounting. Drilling of the body of the fitting for mounting will not be permitted. The cover screws shall be appropriate in size, non-corrodible and not less than four (4) in number for each box opening.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.3

3.3

ELECTRICAL WIRING DEVICES:

- A. **WALL-SWITCHES** shall be of the best specification grade, quiet type, and shall have a rating of 20 Amperes at 277 volts, as manufactured by Bryant, Hubbell or approved equal. The mechanism shall be equipped with arc snuffers. They shall be of the tumbler type, single pole. Switches of the 3-way type shall have a similar rating.
- B. **RECEPTACLES:**



1. **CONVENIENCE OUTLETS:** shall be of the best specification grade, duplex, two-pole, 3-wire, 20 Amperes at 125 volts. It shall have a grounding pole that shall be grounded to the conduit system. Receptacles shall be capable of both back and side wiring and shall have only one (1) grounding screw. Receptacles shall be Hubbell Cat. #5262 or approved equal.
 2. **HEAVY DUTY RECEPTACLE OUTLETS:** shall have the Ampere rating and the number of poles specified on the Contract Drawings and shall be Hubbell, Russell-Stoll, Bryant, AH & H or approved equal. Each outlet shall have a grounding pole, which shall be grounded to the conduit system.
 3. **FLOOR RECEPTACLES:** shall be Russell & Stoll #3040 or approved equal, to fit into floor box previously specified.
 4. **NAMEPLATES:** are required for all receptacles other than 120V.
- C. **CLOCK HANGERS:** Clock outlets for surface type clocks shall be equipped with a supporting hook and recessed faceplate to conceal the electrical cord.
- D. **WATERTIGHT DEVICES:** For installations exposed to weather or in damp locations, the devices shall be in a gasketed, cast iron enclosure.
- E. **PLATES:**
1. Every convenience outlet and switch outlet shall be covered by means of a stainless steel No. 302 - 0.4" antimagnetic plate with an approved finish, unless provided otherwise in the detailed Specifications.
 2. Where two (2) or three (3) switches are grouped together, a single faceplate shall be used. Where more than three (3) switches are located at one (1) point, the faceplates may be made up in multiple units.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4

3.4 ELECTRICAL CONDUCTORS AND TERMINATIONS:

- A. **CONDUCTORS FOR LIGHT AND POWER -** All wire and cable shall be of annealed copper of 98% conductivity. Aluminum wire or cable will not be permitted. The insulation shall be flame retardant, moisture and heat resistant, thermoplastic, type THW or THWN rated for 600 volts at 75 degrees C. for both wet and dry locations. Wires No. 8 or larger shall be stranded. Wires and cables shall also be subject to the requirements of the NYCEC. Cables for incoming service or wire in conduits contiguous with the earth or in concrete or other damp or wet locations shall be synthetic rubber insulated with neoprene jacket, heat and moisture resistant and shall be equal to UL Type USE and rated for 600 volts at 75 degrees C. for both wet and dry locations.
- B. **FIXTURE WIRE:** Lighting fixtures shall be wired with No. 14 gauge wire designated as AWM and rated at 105 degrees C.
- C. **OTHER TYPES:** Cables and wires for interior communication systems are described in applicable detailed Specifications.
- D. **MINIMUM SIZE:** Conductors smaller than No. 12 AWG shall not be used for light or power.
- E. **COLOR CODE:** Wires shall have a phase color code, and multiple conductor cables shall be color coded.
- F. **CABLE DATA:** The Electrical Contractor shall submit for approval the following information for each size and type of cable to be furnished.
1. Manufacture of Cable - Location of Plant.
 2. Minimum insulation resistance at standard test temperature.
 3. Days required for delivery to site of work after order to proceed with manufacture.



- G. ORIGINAL REELS: Cable and wire shall be delivered to the site of the work on original sealed factory reels.
- H. WIRE INSTALLATION:
1. INSTALL WIRES AFTER PLASTERING - Feeder and branch circuits wiring shall not be installed in conduit before the rough plastering work is completed. No conductors shall be pulled into floor conduits before floor is poured.
 2. CONDUIT SECURED IN PLACE - No conductor shall be pulled into any conduit run before all joints are made up tightly and the entire run rigidly secured in place.
 3. WIRE ENDS - All wires shall be left with sufficiently long ends for proper connection and stowing.
 4. PULLING COMPOUNDS - When required to ease the pulling-in of wires into conduit, only approved compounds as recommended by cable manufacturers shall be used.
 5. PRESSURE CONNECTORS - for wires shall be of the cast copper or forged copper pressure plate type. Connectors shall be O.Z., Burndy, National Electric Products or approved equal.
 6. Splices and feeder taps in the gutters of panel boxes shall be made by means of pressure plate type connectors encased in composition covers as manufactured by O.Z., Burndy, National Electric Products or approved equal.
 7. Splices in branch wiring for sound systems and fire systems, shall be first made mechanically secure, then soldered and taped.
 8. In lieu of soldered splices (except for sound and Fire Systems, which must have soldered splices) the following alternates are acceptable for operating temperatures up to 105 degrees C., for fluorescent fixtures and for the splicing of branch circuit wiring up to No. 8 AWG wire:
 - a. Mechanical splices made with mechanical connectors as manufactured by the Minnesota Manufacturing Company "Scotchlock" or approved equal. Mechanical connectors requiring a special tool (pressure connectors, insulators and locking rings) by Buchanan or approved equal. The tool used for connector application shall be as approved by the connector manufacturer.
 - b. For wire and cable No. 6 AWG and larger for branch circuit wiring the seamless tubular connector will only be accepted. Application of this connector shall be with a tool recommended by the connector manufacturer.
 9. TAGS: All feeders and risers shall be tagged at both ends, and in all pull and junction boxes and gutter spaces through which they pass. Such tags shall be of fiber and have the feeder designation and size stamped thereon.
 10. BRANCH CIRCUIT WIRING:
 - a. The Contractor installing branch circuit wiring shall test the work for correct connections and leave all loop splices in the fixture outlet boxes properly spliced and taped. The Contractor shall provide wire ends long enough for convenient connection to device.
 - b. NEUTRALS: No common neutrals shall be used except for lighting branch circuits. Each neutral wire shall be terminated separately on a neutral busbar in the panelboard. No common neutrals will be permitted for convenience receptacle branch circuits.
- I. TERMINATIONS
1. LUGS: All lugs for all devices and all cable terminations shall be copper. AL/CU rated lugs will not be permitted. The only exception to this requirement is when the particular device is not manufactured with copper lugs by any manufacturer. Lugs for No. 6 AWG cable and larger shall be



cast copper or forged copper pressure plate type. Lugs for 1/0 and larger shall be fastened with two (2) bolts.

2. All lugs shall be of the proper size to accept the cable connected to them. Any Contractor furnishing a device containing lugs is to coordinate with the Electrical Work Contract Documents to insure that the device terminations are adequate for the wire or cable (whose size may be larger than expected due to voltage drop considerations) connected to the device. This requirement applies to both the Electrical Contractor whose branch circuit protector must have lugs of the proper size, as well as to the Contractor who furnishes the device who may have to increase the size of that particular device.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.5

3.5

CIRCUIT PROTECTIVE DEVICES:

This Section sets forth the circuit protective devices such as circuit breakers and safety switches, used in connection with Motor Control Equipment, Distribution Centers, Panelboards and Service Entrance.

A. CIRCUIT BREAKERS:

1. **CIRCUIT BREAKERS:** shall be operable in any position and shall be of the quick-make, quick-break type on manual operation. The handle shall be trip free, preventing contacts from being held in closed position against abnormal overloads or short circuits. Positive visual indication of automatic tripped position of breaker shall be provided, in addition to the "On" and "Off" indication. All circuit breakers shall be of the bolted type.
2. **TRIP RATING:** Circuit breakers shall be provided with the required number of trip elements, calibrated at 40 degrees C., ambient temperature, in accordance with wire sizes or motor currents as shown on Contract Drawings or indicated in the Specifications.
3. **POLE BARRIER:** Multipole pole breakers shall be designed to break all poles simultaneously. They shall be provided with barriers between poles and arc suppressing devices.
4. **ELEMENTS:** Multipole circuit breakers shall have frames of not less than a 100 Ampere rating. Multipole circuit breakers for 480 volts AC operation shall have an NEMA interrupting rating of 18,000 Amperes, unless a higher rating is specified in the Specific Requirements or indicated on the Contract Drawings.
5. For circuit breakers with frame size up to and including 225 Amperes, the breakers may be provided with non-interchangeable trip elements. For frame ratings above 225 Amperes, the breakers shall be provided with interchangeable trip elements, which can be replaced readily.
6. Single pole circuit breakers for branch circuits shall have a frame size of no less than 100 Amperes, and shall be rated at 125 volt A.C. with a NEMA interrupting rating of 10,000 Amperes, unless a higher rating is specified in the Specifications or indicated on the Contract Drawings.
7. **INVERSE TIME ACTION:** The circuit breakers shall be dual element type, one (1) element with time limit characteristics, so that tripping will be prevented on momentary overloads, but will occur before dangerous values are reached and the other with instantaneous trip action. Inverse time delay action shall be effective between a minimum tripping point of 125% of rating of breaker and an instantaneous tripping point between 600% and 700% of rated current.
8. **CONSTANCY OF CALIBRATION:** The tripping elements shall insure constant calibration and be capable of withstanding excessive short circuit conditions without injury.
9. **CONTACTS:** shall be non-welding under operating conditions and of the silver to silver type.



10. **TEMPERATURE RISE:** Current carrying parts, except thermal elements, shall not rise in temperature in excess of 30 degrees C. while carrying rated current at rated frequency.
11. **NUMBERING:** Each circuit breaker shall be distinctly numbered when installed in a group with other breakers. The calibration of trip element shall be indicated on each breaker.

B. SAFETY SWITCHES:

NEMA TYPE HD: When safety switches are permitted to be used for service entrance, motor disconnecting means or to control other types of electrical equipment, they shall be of the type HD of a rating not less than 30 Amperes. Enclosures shall be provided with means for locking. For ratings above 60 Amperes terminals shall have double studs.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.6

3.6

DISTRIBUTION CENTERS:

This Section sets forth the construction and installation procedure for Switchboards, Panelboards and Cabinets.

- A. **PANELBOARDS-GENERAL TYPE:** The panelboards shall be of the automatic circuit breaker type with individual breakers for each circuit, removable without disturbing the other units. Circuit breakers shall be in accordance with the requirements outlined under "Circuit Protective Devices."
- B. **NUMBER AND RATING OF CIRCUIT BREAKERS:** The Contract Drawings show a layout of each panel, giving the number, frame, size and trip setting of circuit breakers and number of branch circuits and spare breakers. Each branch circuit shall be distinctly numbered.
- C. **BUS-BAR CONSTRUCTION AND SUPPORT:** Panel Boards shall be of the dead front type and shall have bus bars and branch circuits designed to suit the system and voltage. Current carrying parts, exclusive of circuit breakers shall be copper and based on a maximum density of 1,000 Amperes per square inch. Bus bars for the main switchboard shall be designed for the frame rating of the Service Breaker. Bus bars shall run up the center of the panel, unless otherwise indicated, and shall have connected thereto the various branch circuits. Unless otherwise specified, bus bars for each panelboard shall be equipped with main lugs only and capacity as required on Contract Drawings. Where main protection is required, automatic circuit breakers shall be used. A neutral bus of at least the same capacity as a live bus bar shall be provided for the connection of all neutral conductors. Each terminal shall be identified. All current carrying parts, exclusive of circuit breakers, shall be of copper with a minimum number of joints. The bus bar structure shall be a self supporting unit, firmly fastened to a 1/2 inch plastic board, extending the full length and width of assembly which shall serve to insulate the bus structure from the back of panel box. Other methods affording equally effective bus structure support and insulation will be given consideration. An insulating barrier shall separate neutral bus from other parts of panel.
- D. **CIRCUIT BREAKER ASSEMBLY:** The entire circuit breaker and bus bar assembly shall be mounted on an adjustable metal base or pan and secured to the back of panel box. The panel shall have edges flanged for rigidity.
- E. **PANEL MOUNTING:** The panel shall be centered in the panel box to line up with door openings and set level and plumb so that no live parts are exposed with the door open.
- F. **PANEL CABINET:**
 1. **PANEL CABINET INSTALLATION:** When installed surface mounted in panel closets they shall be mounted on Kindorf channel.



2. Where cabinets cannot be set entirely flush due to shallow walls or partitions or where cabinet is extra deep, the protruding sides of cabinet shall be trimmed with a metal or hardwood return molding of approved design and fastened to cabinet so as to conceal the intersection between the wall and cabinet.
- G. **NAMEPLATES:** Nameplates where required, shall be made of engraved Lamicoid sheet, or approved equal. Letters and numbers shall be engraved white on a black background (except for Firehouse projects which shall have white letters on a red background). The Electrical Contractor shall submit an engraved sample for approval as to design and style of lettering before proceeding with the manufacture of the nameplate. Nameplates shall be of suitable size and shall also be provided at the top of the switchboard or section thereof and on the trim at the top of all lighting and power panels. Similar nameplates shall also be provided for each distribution circuit breaker giving the breaker number, the number of the feeder, and the name of the equipment fed.
- H. **SHOP DRAWINGS:** showing all details of boxes, panels, etc., shall be submitted for approval.
- I. **DIRECTORIES:** A directory shall be fastened with brass screws and consist of a noncorrosive metal frame with dimensions not less than five (5) inches x eight (8) inches and a transparent window of Plasticite, Plexiglass, Lucite or approved equal that is not less than 1/16 inch thick over cardboard or heavy paper. The directory shall be typewritten and show the number of each circuit, the name of circuit and lighting or equipment supplied. The size of riser feeder shall be as indicated on directory. The dimensions of directory shall be submitted for approval for each size of panel.
- J. **CONSTRUCTION**
1. **FINISH:** Panel boxes, doors and trim for installation in dry locations, shall be zinc coated after fabrication by the hot-dip galvanizing or electroplate process on inside and outside surfaces. In damp locations, panelboards shall be enclosed and gasketed NEMA 3R type. Panelboards located outdoors or exposed to the weather shall be NEMA 3X Type.
 2. **PAINTING:** Panel boxes, doors and trim shall receive a coat of approved priming paint and a second coat of approved paint in the field after installation. Paint shall be applied to the inside and outside of boxes and on both sides of trim. Panel trims and doors shall receive a third or finishing coat on the outside after installation. Approval as to texture and color must be obtained before the final coat is applied. All of the aforementioned painting is to be done by the Contractor who furnishes the boxes and trim. Where panel trims or boxes are installed on walls which are to be painted, the previously mentioned third or finishing coat of paint shall be included in the work of the Contractor who has the Contract for general interior painting.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.7

3.7

MOTORS:

This Section sets forth the general design, construction and performance requirements, which shall apply to all motors furnished in any of the Contracts.

- A. **MOTOR DESIGN:** All motors shall be designed to comply with the New York State Energy Conservation and Construction Code currently in effect and the New York City Energy Conservation Code. In the event of any conflict or inconsistency between such codes the New York City Energy Conservation Code shall prevail. Motors shall have standard NEMA frames and shall have nameplate ratings adequate to meet the specified conditions of operation. Motor performance under variable conditions of voltage and frequency shall be within the limits set in NEMA standards, unless modified in the Specifications. Motors shall be expressly designed for the hazard duty load, voltage and frequency as specified in the Contract.



All motor windings shall be copper. All motors intended to operate on a 208 volt system shall be designed and rated for 200 volts.

- B. **STANDARDS OF COMPARISON:** In the absence of specific motor specifications, in general, the best standard products of the leading motor manufacturers shall be considered as a standard for comparison. The requirements of the NEMA standards for motors and generators shall be deemed to contain the minimum requirements of performance and design.
- C. **OBJECTIONABLE NOISES:** Objectionable noises will not be tolerated and exceptionally quiet motors may be required for certain specified locations. Noise control tests as per the New York City Construction Codes may be performed as directed by the Commissioner. Such motors shall bear a nameplate lettered "Quiet Motor." Springs and slip rings shall be of approved non-ferrous material.
- D. **BEARINGS:**
1. Bearings, unless specified otherwise, shall be of the ball or roller type. Motors one (1) horsepower and larger that are equipped with ball roller bearings shall also have lubrication of the pressure-relief greasing type. Each Contractor who furnishes four (4) or more such motors shall also furnish, as part of its Contract, a pressure grease gun of rugged design, of approximately 10 ounce capacity, complete with necessary adapters. The Contractor shall also provide 10 pounds of approved gun grease.
 2. For any particular unit where sleeve bearings are deemed desirable, permission for their use may be granted by the Commissioner. Motors one (1) horsepower and larger that are equipped with sleeve type bearings shall in addition to having protected accessible fittings for oiling be provided with visible means for determining normal oil level. Lubrication shall be positive, automatic and continuous.
- E. **MOTOR TERMINALS AND BOXES:** Each motor shall be furnished with flexible leads of sufficient length to extend for a distance of not less than three (3) inches beyond the face of the conduit terminal box. This box shall be furnished of ample size to make and house motor connections. These requirements shall be met irrespective of any other standards or practices. Size of cable terminals and conduit terminal box holes shall be subject to approval. For motors five (5) horsepower or larger, each terminal shall come with two (2) cast or forged copper pressure type connectors with bolts, nuts and washers. For motors of smaller ratings, connectors of other acceptable types may be furnished. For installations exposed to the weather or moist locations, terminal boxes shall be of cast iron with threaded hubs and gasketed covers. Cover screws shall be of non-corrosive material.
- F. **MOTOR TEMPERATURE RISES:** The motor nameplate temperature rises for the various types of motor enclosures shall be as listed below:
- | | |
|---|---------------|
| 1. Open Frame | 40 degrees C. |
| 2. Totally enclosed and enclosed fan cooled | 55 degrees C. |
| 3. Explosion proof and submersible | 55 degrees C. |
| 4. Partially enclosed and drip proof | 40 degrees C. |
- The temperature of the various parts of a motor shall meet the requirements of NEMA standards for the size and type of the motors. Tests for heating shall be made by loading the motor to its rated horsepower and keeping it so loaded for the rated time interval or until the temperature becomes constant.
- G. **SPECIAL CODE INSTALLATIONS:** Electrical installations covered by special publications of NBFU and by special City rulings and regulations shall comply in design and safety features with such applicable codes, regulations and rulings, and shall be furnished and installed complete with all accessories and safety devices as therein specified.



- H. MOTORS ON LIGHTING PANELS: The largest A.C. motor permitted on branch circuits of lighting panels shall not exceed 1/4 horsepower.
- I. MOTORS RATED: ½ horsepower and larger shall be polyphase.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.8

3.8 MOTOR CONTROL EQUIPMENT:

This Section sets forth the requirements for motor controllers and associated devices. Such requirements are applicable to all Contracts under which motor control equipment is furnished or installed.

- A. MANUFACTURER: All control equipment furnished under the Contract shall be the product of a single manufacturer. Exceptions to this rule may be granted in the case of controllers for fractional horsepower motors driving special equipment, the various units of which have been engineered to obtain specific performance.
- B. CONTROL ITEMS REQUIRED: The Contractor who furnishes a motor shall also furnish therewith complete disconnecting, starting and control equipment as required by the detailed Specifications, the various code authorities and for the successful operation of the driven equipment. These items include circuit breaker, magnetic starter with overload protection and low voltage release or protection, push button stations, pilot lights and alarms, float, pressure, temperature and limit switches, load transfer switches, devices for manual operation and speed controllers, etc. The Contractor shall furnish as many of these items as are required for the successful operation of the driven unit.
 - 1. Where a motor is to be located out of sight of the controller, the Contractor who furnishes the motor shall furnish an approved disconnecting means to be mounted near motor.
- C. TYPES OF STARTERS:
 - 1. SQUIRREL CAGE: A.C. motors of the squirrel cage type, rated from one (1) to 30 horsepower, shall have magnetic across the line starters; motors rated above 30 horsepower shall be furnished with reduced voltage (autotransformer type) starter or part winding start with time delay to reduce inrush current. Size of starters shall be based on 200V. operation.
 - 2. SLIP RING: A.C. Motors of the slip-ring type shall be furnished with primary across the line starters interlocked with secondary starting and regulating equipment. The interlocking feature shall prevent starting of the motor when the secondary controller is off the initial starting point.
 - 3. MAGNETIC: For fractional horsepower motors, magnetic type starters are not required unless the particular method of controlling the driven equipment makes them necessary. Where individual single phase fractional horsepower motors or the sum of fractional horsepower motors controlled by an automatic device are ½ horsepower or more, magnetic starters and circuit breakers shall be used. Single phase A.C. motors smaller than ½ horsepower or three-phase A.C. motors smaller than one (1) horsepower where manual control is specified may be furnished with starters of toggle switch or push button type with inbuilt thermal protection. No additional disconnecting means is required to be furnished with this type of starter. This type of starter may also be used in series with automatic control devices such as thermostats, float and pressure switches, provided the individual motor or the sum of fractional horsepower motors is less than ½ horsepower. Means for manual operation shall be provided.
- D. DISCONNECTING BREAKER: All motor starters, unless otherwise specified, shall be provided with a disconnecting means in the form of a circuit breaker of the type specified under Sub-Section 3.5 CIRCUIT



- PROTECTIVE DEVICES of the General Conditions. This disconnecting means shall be contained in the same housing with the starter and shall be operable from outside. Means shall be provided for locking the handle of the circuit breaker in the "OFF" position if it is desired to take the equipment out of service and prevent unauthorized starting.
- E. CONTROL CABINET: DRY LOCATIONS - All starters shall be furnished with general purpose, NEMA Type 1, sheet metal enclosures with hinged covers and baked enamel finish.
 - F. CONTROL CABINET – WATERTIGHT: In wet locations, cast iron watertight enclosures with threaded hubs, galvanized and gasketed hinged covers shall be provided.
 - G.
 - 1. PANELS: Motor control devices and appliances shall be mounted on approved insulating slabs with all wiring and connections made on the back of the slabs.
 - 2. WIRING AND TERMINALS: Wiring connections for currents of 100 Amperes or less may be made with copper wire or cable with special flameproof insulating coverings. Such wires shall be installed in a neat workmanlike manner, flat against the slab, and held in place by clips. Connections shall be made with pressure connectors for No. 8 AWG and larger wires, and with grommets for small stranded wires. Except for incoming and outgoing main leads, all connections shall terminate on approved connector blocks, which may be installed on the face of the slab. For small, across the line starters, the above requirements may be modified if satisfactory connections are provided.
 - 3. COPPER BUS: For currents exceeding 100 Amperes, copper bus shall be used in place of wires. The bus shall be constructed of copper rods, tubing or flat strap, bent and shaped properly and securely attached to the slab in a neat and workmanlike manner. The cross section of copper shall provide sufficient areas to keep current density at not more than 1,000 Amperes per square inch.
 - H. COOPERATION: The Contractors who furnish electrically operated equipment shall give to the Electrical Contractor full information relative to sizes and locations of apparatus furnished by them which require electrical connections.

Equipment being installed by the Electrical Contractor shall be delivered to the Electrical Contractor by other Contractors in proper time and sequence so that the Electrical Contractor shall be able to meet its Project Schedule.

- I. SPARE PARTS:
 - 1. FURNISH: Each Contractor shall furnish the following spare parts pertaining to equipment furnished by each Contractor.
 - One (1) set of contact fingers and springs and thermal elements for each three (3) (or fraction) of each size of magnetic contactor starter.
 - One (1) holding coil for each three (3) (or fraction) of each size of magnetic contactor starter.
 - 2. WRAPPER MARKING: All parts shall be delivered to the Resident Engineer neatly wrapped and boxed and plainly tagged and marked for identification and reordering.

3.9 SCHEDULE OF ELECTRICAL EQUIPMENT:

Schedule D, which is set forth in the Addendum, lists requirements for electrical motor equipment that may be included in one or more of the Specifications for the separate contracts for the Project. SCHEDULE D delineates the responsibilities of each separate contractor for electrical motor control equipment. In the event of any conflict between the Specifications and SCHEDULE D, SCHEDULE D shall take precedence; provided, however, in the event of an omission from SCHEDULE D (i.e., SCHEDULE D omits either a reference to or information concerning electrical motor equipment which is set forth in the Specifications), such omission from SCHEDULE D shall have no effect and the



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
MULTIPLE CONTRACT PROJECTS
Issue Date - January 15, 2015

Contractor's obligation with respect to the electrical motor control equipment, as set forth in the Specifications, shall remain in full force and effect.

END OF SECTION 01 35 06

GENERAL ELECTRICAL REQUIREMENTS
01 35 06 - 18



SECTION 01 35 26
SAFETY REQUIREMENTS PROCEDURES

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract]
- B. Each Contractor shall comply with the requirements of "*The City of New York Department of Design and Construction Safety Requirements*". This document is included in the Information for Bidders.

1.2 SUMMARY:

- A. This Section includes administrative and general procedural requirements for Safety and Health Requirements, including:
 - 1. Definitions
 - 2. Required Safety Meeting
 - 3. Compliance with Regulations
 - 4. Submittals
 - 5. Personnel Protective Equipment
 - 6. Hazardous Materials
 - 7. Emergency Suspension of Work
 - 8. Protection of Personnel
 - 9. Environmental Protection

1.3 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.4 REQUIRED SAFETY MEETINGS:

- A. Prior to commencing construction, the Resident Engineer will schedule and hold a preconstruction kick-off meeting either at DDC's main office or at the Project site with representatives of each Contractor, including the principal on-site project representative and one or more safety representatives, Commissioner's designated representatives and other concerned parties for the purpose of reviewing the Contract Safety requirements. The Contractor's safety requirements shall be reviewed, and implementation of safety provisions pertinent to the Work shall be discussed.
- B. The GC Contractor is responsible to conduct weekly documented jobsite safety meetings, given to all jobsite personnel, including all Contractors and their subcontractors on the project, with the purpose of discussing safety topics and job specific requirements at the DDC worksite.



1.5 COMPLIANCE WITH REGULATIONS:

- A. The Work, including contact with or handling of hazardous materials, disturbance or dismantling of structures containing hazardous materials, and disposal of hazardous materials, shall comply with the applicable requirement for CFR Parts 1910 and 1926, and 40 CFR, Parts 61, 261, 761 and 763.
- B. Work involving disturbance or dismantling of asbestos or asbestos containing materials, demolition of structures containing asbestos and removal of asbestos, shall comply with 40 CFR Part 61, Subparts A and M, and 40 CFR Part 763, as applicable.
- C. Work shall additionally comply with all applicable federal, state and local safety and health regulations.
- D. In case of a conflict between applicable regulations, the more stringent requirements shall apply.
- E. All workers working on the DDC project site are required by NYC Local Law 41 to complete the OSHA 10 –hour training course.

1.6 SUBMITTALS:

- A. Each Contractor shall submit, to the Resident Engineer, copies of the Safety Program, Site Safety Plan and other required documentation in accordance with the *"New York City Department of Design and Construction Safety Requirements."*
- B. Permits: If hazardous materials are disposed of off-site submit copies of shipping manifests and permits from applicable federal, state or local authorities and disposal facilities, and submit certificates that the material has been disposed of in accordance with regulations to the Resident Engineer.
- C. Accident Reporting: Submit a copy of each accident report to the Resident Engineer in accordance with the *"New York City Department of Design and Construction Safety Requirements."*
- D. All Asbestos and Lead project regulatory notifications are to be submitted to DDC's Bureau of Environmental and Geotechnical Services (BEGS) through the Resident Engineer.
- E. Request for Subcontractor Approval: Any subcontractor performing environmental work shall submit required documentation for approval to perform such work as required by DDC's BEGS.

PART II – PRODUCTS

2.1 PERSONNEL PROTECTIVE EQUIPMENT:

- A. Special facilities, devices, equipment and similar items used by each Contractor in execution of the Work shall comply with 29 CFR Part 1910, subpart I, Part 1926, subpart E and other applicable regulations.

2.2 HAZARDOUS MATERIALS:

- A. Each Contractor shall bring to the attention of the Commissioner, any material encountered during execution of the Work that the Contractor suspects to be hazardous.
- B. The Commissioner shall determine whether such Contractor shall perform tests to determine if the material is hazardous. A change to the Contract price may be provided, subject to the applicable provisions of the Contract.



- C. If the material is found to be hazardous, the Commissioner may direct such Contractor to remediate the hazard and a change to the Contract price may be provided, subject to the applicable provisions of the Contract.

PART III – EXECUTION

3.1 EMERGENCY SUSPENSION OF WORK:

- A. When a Contractor is notified by the Commissioner of noncompliance with the safety provisions of the Contract, that Contractor shall immediately, unless otherwise instructed, correct the unsafe condition, at no additional cost to the City.
- B. If the Contractor fails to comply promptly, all or part of the Work may be stopped by notice from the Commissioner.
- C. When, in the opinion of the Commissioner, the Contractor has taken satisfactory corrective action, the Commissioner shall provide written notice to the Contractor that work may resume.
- D. The Contractor shall not be allowed any extension of time or compensation for damages in connection with a work stoppage for an unsafe condition.

3.2 PROTECTION OF PERSONNEL:

- A. Each Contractor shall take all necessary precautions to prevent injury to the public, occupants, or damage to property of others. The public and occupants includes all persons not employed by the Contractor or subcontractor(s).
- B. Whenever practical, the work area shall be fenced, barricaded or otherwise blocked off from the Public or occupants to prevent unauthorized entry into the work area, in compliance with the requirements of Section 01 50 00, TEMPORARY FACILITIES, SERVICES AND CONTROLS, and including, without limitation, the following:
 - 1. Provide traffic barricades and traffic control signage where construction activities occur in vehicular areas.
 - 2. Corridors, aisles, stairways, doors and exit ways shall not be obstructed or used in a manner to encroach upon routes of ingress or egress utilized by the public or occupants, or to present an unsafe condition to the public or occupants.
 - 3. Store, position and use equipment, tools, materials, scraps and trash in a manner that does not present a hazard to the public or occupant by accidental shifting, ignition or other hazardous activity.
 - 4. Store and transport refuse and debris in a manner to prevent unsafe and unhealthy conditions for the public and occupants. Cover refuse containers, and remove refuse on a frequent regular basis acceptable to the Resident Engineer. Use tarpaulins or other means to prevent loose transported materials from dropping from trucks or other vehicles.

3.3 ENVIRONMENTAL PROTECTION:

- A. Dispose of solid, liquid and gaseous contaminants in accordance with local codes, laws, ordinances and regulations.
- B. Comply with applicable federal, state and local noise control laws, ordinances and regulations, including but not limited to 29 CFR 1910.95, 29 CFR 1926.52 and NYC Administrative Code Chapter 28 of Title 15.

END OF SECTION 01 35 26



NEW YORK CITY DEPARTMENT OF
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Division 01 – DDC STANDARD GENERAL CONDITIONS
MULTIPLE CONTRACT PROJECTS
Issue Date - January 15, 2015

NO TEXT

SAFETY REQUIREMENTS PROCEDURES
01 35 26 - 4



**SECTION 01 35 91
HISTORIC TREATMENT PROCEDURES**

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 35 91

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This Section includes administrative and procedural requirements for the historic treatment of Designated Landmark Structures and structures of Landmark/Historical significance, as identified in the Addendum. Specific requirements are indicated in other sections of the project specifications.
- B. This Section includes, without limitation, the following:
1. Storage and protection of existing historic materials.
 2. Temporary protection of historic materials during construction.
 3. General Protection
 4. Protection during use of heat-generating equipment.
 5. Photographic Documentation
 6. NYC Landmarks Preservation Commission Final Approval signoffs.

1.3 RELATED SECTIONS: include without limitation the following:

- A. Section 01 10 00 SUMMARY
- B. Section 01 32 33 PHOTOGRAPHIC DOCUMENTATION
- C. Section 01 33 00 SUBMITTAL PROCEDURES
- D. Section 01 77 00 CLOSEOUT PROCEDURES
- E. Section 01 78 39 CONTRACT RECORD DOCUMENTS

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.



- C. Landmark Structure or Site: Any building or site which has been designated as a landmark, or any building or site within a landmark district, as designated by the New York City Landmarks Preservation Commission or the New York State Historic Preservation Office.
- D. Landmark Quality Structure: Any building which has been determined by the City to be of landmark quality and/or historical significance.
- E. Preservation: To apply measures necessary to sustain the existing form, integrity, and materials of a historic property. Work may include preliminary measures to protect and stabilize the property.
- F. Rehabilitation: To make possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features that convey its historical, cultural, or architectural values.
- G. Restoration: To accurately depict the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and the reconstruction of missing features from the restoration period.
- H. Reconstruction: To reproduce in the exact form and detail a building, structure, or artifact as it appeared at a specific period in time.
- I. Stabilize: To apply measures designed to reestablish a weather-resistant enclosure and the structural reinforcement of an item or portion of the building while maintaining the essential form as it exists at present.
- J. Protect and Maintain: To remove deteriorating corrosion, reapply protective coatings, and install protective measures such as temporary guards; to provide the least degree of intervention.
- K. Replace: To duplicate and replace entire features with new material in kind. Replacement includes the following conditions:
 - 1. Duplication: Includes replacing elements damaged beyond repair or missing. Original material is indicated as the pattern for creating new duplicated elements.
 - 2. Replacement with New Materials: Includes replacement with new material when original material is not available as patterns for creating new duplicated elements.
- L. Replacement with Substitute Materials: Includes replacement with compatible substitute materials. Substitute materials are not allowed, unless otherwise indicated.
- M. Remove: To detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- N. Remove and Salvage: To detach items from existing construction and deliver them to the City ready for reuse.
- O. Remove and Reinstall: To detach items from existing construction, repair and clean them for reuse, and reinstall them where indicated.
- P. Existing to Remain or Retain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed and salvaged, or removed and reinstalled.
- Q. Material in Kind: Material that matches existing materials, as much as possible, in species, cut, color, grain, and finish.



1.5 SUBMITTALS:

- A. **Historic Treatment Program:** The Contractor responsible for Historic Treatment Work shall submit a written plan for each phase or process, including protection of surrounding materials during operations. Describe in detail materials, methods, and equipment to be used for each phase of work.
- B. **Alternative Methods and Materials:** If alternative methods and materials to those indicated are proposed for any phase of work, submit for Commissioner's approval a written description including evidence of successful use on other comparable projects, and program of testing to demonstrate effectiveness for use on this Project.
- C. **Qualification Data:** For historic treatment specialists as specified and required by individual sections of the project specifications.
- D. **Photographs for Designated Landmark Structures:** Submit photographs in accordance with Section 01 32 33, PHOTOGRAPHIC DOCUMENTATION and as described in this section.
- E. **Record Documents:** Include modifications to manufacturer's written instructions and procedures, as documented in the historic treatment preconstruction conference and as the Work progresses.

1.6 QUALITY ASSURANCE:

- A. **Special Experience Requirements:** Special Experience Requirements may apply to the firm that will provide Historic Treatment Services. If applicable, such Special Experience Requirements are set forth in the Bid Booklet and the Addendum.
- B. **Historic Treatment Preconstruction Conference:** The Resident Engineer will schedule and hold a preconstruction meeting at the site in accordance with Section 01 31 00, PROJECT MANAGEMENT AND COORDINATION.
 - 1. Review manufacturer's written instructions for precautions and effects of products and procedures on building materials, components, and vegetation.
 - a. Record procedures established as a result of the review and distribute to affected parties.

1.7 STORAGE AND PROTECTION OF HISTORIC MATERIALS:

- A. **Removed and Salvaged Historic Materials:** As specified and required by individual sections of the project specifications.
- B. **Removed and Reinstalled Historic Materials:** As specified and required by individual sections of the project specifications.
- C. **Existing Historic Materials to Remain:** Protect construction indicated to remain against damage and soiling during historic treatment. When permitted by the Commissioner, items may be removed to a suitable, protected storage location during historic treatment and reinstalled in their original locations after historic treatment operations are complete.
- D. **Storage and Protection:** When removed from their existing location, store historic materials, at a location acceptable to the Commissioner, within a weather tight enclosure where they are protected from wetting by rain, snow, or ground water, and temperature variations. Secure stored materials to protect from theft.
 - 1. Identify removed items with an inconspicuous mark indicating their original location.

PART II – PRODUCTS (Not Used)



PART III – EXECUTION

3.1 PROTECTION, GENERAL:

- A. Comply with manufacturer's written instructions for precautions and effects of products and procedures on adjacent building materials, components, and vegetation.
- B. Ensure that supervisory personnel are present when work begins and during its progress.
- C. Temporary Protection of Historic Materials during Construction:
 - 1. Protect existing materials during installation of temporary protections and construction. Do not deface or remove existing materials.
 - 2. Attachments of temporary protection to existing construction shall be approved by the Commissioner prior to installation.
- D. Protect landscape work adjacent to or within work areas as follows:
 - 1. Provide barriers to protect tree trunks.
 - 2. Bind spreading shrubs.
 - 3. Use coverings that allow plants to breathe and remove coverings at the end of each day. Do not cover plant material with a waterproof membrane for more than 8 hours at a time.
 - 4. Set scaffolding and ladder legs away from plants.
- E. Existing Drains: Prior to the start of work or any cleaning operations, test drains and other water removal systems to ensure that drains and systems are functioning properly. Notify Commissioner immediately of drains or systems that are stopped or blocked. Do not begin Work of this Section until the drains are in working order.
 - 1. Provide a method to prevent solids, including stone or mortar residue, from entering the drains or drain lines. Clean out drains and drain lines that become blocked or filled by sand or any other solids because of work performed under this Contract.
 - 2. Protect storm drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.

3.2 PROTECTION DURING USE OF HEAT-GENERATING EQUIPMENT:

- A. No roofing work requiring the use of an open flame shall be permitted on any Designated Landmark Structure whose roof or wall structure is made of wood or primarily of wood.
- B. Comply with the following procedures while performing work with heat-generating equipment, including welding, cutting, soldering, brazing, paint removal with heat, and other operations where open flames or implements utilizing heat are used:
 - 1. Obtain Commissioner's approval for operations involving use of open-flame or welding equipment.
 - a. Notification shall be given for each occurrence and location of work with heat-generating equipment.
 - 2. As far as practical, use heat-generating equipment in shop areas or outside the building.
 - 3. Before work with heat-generating equipment commences, furnish personnel to serve as a fire watch (or watches) for location(s) where work is to be performed.
 - 4. Do not perform work with heat-generating equipment in or near rooms or in areas where flammable liquids or explosive vapors are present or thought to be present. Use a combustible gas indicator test to ensure that the area is safe.



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5. Remove and keep the area free of combustibles, including, rubbish, paper, waste, etc., within area of operations.
6. If combustible material cannot be removed, provide fireproof blankets to cover such materials.
7. Where possible, furnish and use baffles of metal or gypsum board to prevent the spraying of sparks or hot slag into surrounding combustible material.
8. Prevent the extension of sparks and particles of hot metal through open windows, doors, holes, and cracks in floors, walls, ceilings, roofs, and other openings.
9. Inspect each location of the day's work not sooner than 30 minutes after completion of operations to detect hidden or smoldering fires and to ensure that proper housekeeping is maintained.

- C. Where sprinkler protection exists and is functional, maintain it without interruption while operations are being performed. If operations are performed close to automatic sprinkler heads, shield the individual heads temporarily with guards.

3.3 PHOTOGRAPHIC DOCUMENTATION:

- A. Photographs for Designated Landmark Structures: Show existing conditions prior to any historic treatments, including one overall photograph and two close-up photographs of all areas of work affected. Show one overall photograph and two close-up photographs of all areas of work after the successful execution of all historical treatments.

3.4 NEW YORK CITY LANDMARKS PRESERVATION COMMISSION FINAL APPROVALS SIGNOFF:

- A. For all projects involving a Landmark Structure or Site, the GC Contractor, at the completion of the work, shall submit to the Commissioner, in accordance with Section 01 78 39, CONTRACT RECORD DOCUMENTS, all documentation concerning the successful execution of all historic treatments. This shall include, but not be limited to, copies of all before and after photographs of historic treatments, one copy of the Contractor's as-built drawings, copies of testing and analysis results, including cleaning, mortar analysis, pointing mortars and all other information pertaining to work performed under the New York City Landmarks Preservation Commission jurisdiction.

END OF SECTION 01 35 91



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HISTORIC TREATMENT PROCEDURES
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**SECTION 01 40 00
QUALITY REQUIREMENTS**

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This Section includes the following:
1. Definitions
 2. Conflicting Requirements
 3. Quality Assurance
 4. Quality Control
 5. Approval of Materials
 6. Special Inspections (Controlled Inspection)
 7. Inspections by Other City Agencies
 8. Certificates of Approval
 9. Acceptance Tests
 10. Repair and Protection
- B. This Section includes administrative and procedural requirements for quality control to assure compliance with quality requirements specified in the Contract Documents.
- C. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
- D. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
- E. Provisions of this Section do not limit requirements for each Contractor to provide quality-assurance and -control services required by the Commissioner or authorities having jurisdiction.
- F. Specific test and inspection requirements are specified in the individual sections of the Specifications.
- G. LEED: Refer to the Addendum to identify whether this project is designed to comply with a Certification Level according to the U.S. Green Building Council's Leadership in Energy & Environmental Design (LEED) Rating System, as specified in Section 01 81 13, "SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS."
- H. COMMISSIONING: Refer to the Addendum to identify whether this project will be Commissioned by an independent third party under separate contract with the City of New York. Commissioning shall be in accordance with ASHRAE and USGBC LEED-NC procedures, as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS. Each Contractor shall cooperate with the commissioning agent and provide whatever assistance is required.



1.3 RELATED SECTIONS: Include without limitation the following:

- A. Section 01 10 00 SUMMARY
- B. Section 01 31 00 PROJECT MANAGEMENT AND COORDINATION
- C. Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION
- D. Section 01 33 00 SUBMITTAL PROCEDURES
- E. Section 01 77 00 CLOSEOUT PROCEDURES
- F. Section 01 78 39 CONTRACT RECORD DOCUMENTS

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.
- C. Commissioning: A Total Quality Assurance process that includes checking the design and installation of equipment, as well as performing functional testing of the same to confirm that the installed equipment is operating and in conformance with the Contract Documents and the City's requirements.

1.5 CONFLICTING REQUIREMENTS:

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, the Contractor shall comply with the most stringent requirement as determined by the Commissioner. The Contractor shall refer any uncertainties and/or conflicting requirements to the Commissioner for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. The Contractor shall refer any uncertainties to the Commissioner for a decision before proceeding.

1.6 QUALITY ASSURANCE:

- A. General: Qualifications paragraphs in this Sub-Section establish the minimum qualification levels required. Individual Specification Sections specify additional requirements.
- B. Installer Qualifications: Special Experience Requirements may apply to the firm that will install, erect or assemble specified work required for the Project. If applicable, such Special Experience Requirements are set forth in the Bid Booklet and the Addendum.



- C. **Manufacturer Qualifications:** Special Experience Requirements may apply to the firm that will manufacture equipment, products or systems specified for the Project. If applicable, such Special Experience Requirements are set forth in the Bid Booklet and the Addendum.
- D. **Fabricator Qualifications:** Special Experience Requirements may apply to the firm that will fabricate material, products or systems specified for the Project. If applicable, such Special Experience Requirements are set forth in the Bid Booklet and the Addendum.
- E. **Professional Engineer Qualifications:** A professional engineer who is licensed to practice in the State of New York and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.
- F. **Factory-Authorized Service Representative Qualifications:** An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- G. **Mockups:** Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
 - 1. Build mockups in location and of size indicated or, if not indicated, as directed by the Resident Engineer.
 - 2. Notify Resident Engineer seven (7) days in advance of dates and times when mockups will be constructed.
 - 3. Demonstrate the proposed range of aesthetic effects and workmanship.
 - 4. Obtain Design Consultant's approval of mockups before starting work, fabrication, or construction.
 - 5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 - 6. Demolish and remove mockups when directed, unless otherwise directed or indicated.

1.7

QUALITY CONTROL:

- A. **City's Responsibilities:** Where quality-control services are indicated as the City's responsibility in the Specifications, the City will engage a qualified testing agency to perform these services.
 - 1. **COST OF TESTS BORNE BY THE CITY:** Where the City directs tests to be performed to determine compliance with the Specifications regarding materials or equipment, and where such compliance is ascertained as a result thereof, the City will bear the cost of such tests.
 - 2. The City will furnish each Contractor with names, addresses, and telephone numbers of testing entities engaged and a description of the types of testing and inspecting they are engaged to perform.
 - 3. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to the appropriate Contractor.
- B. **Contractor's Responsibility:** Tests and inspections not explicitly assigned to the City are the Contractor's responsibility. Unless otherwise indicated, the Contractor shall provide quality-control services as set forth in the Specifications and those required by Authorities having jurisdiction. The Contractor shall provide quality-control services required by Authorities having jurisdiction, whether specified or not.
 - 1. **COST OF TESTS BORNE BY CONTRACTOR** – In the case of tests which are specifically called for in the Specifications to be provided by the Contractor or tests which are required by any Authority having jurisdiction, but are not indicated as the responsibility of the City, the cost thereof shall be borne by the Contractor and shall be deemed to be included in the Contract price. The expenses of the testing personnel assigned by the City shall not be the Contractor's obligation. The Contractor shall reimburse the City for expenditures incurred in providing tests on materials and



- equipment submitted by the Contractor as the equivalent of that specifically named in the Specifications and rejected for non-compliance.
2. Where services are indicated as Contractor's responsibility, the Contractor shall engage a qualified testing agency to perform these quality-control services. Any testing agency engaged by the Contractor to perform quality control services is subject to prior approval by the Commissioner.
 3. The Contractor shall not employ same entity engaged by the City, unless agreed to in writing by the Commissioner.
 4. The Contractor shall notify testing agencies and the Resident Engineer at least 48 hours in advance of the date and time for the performance of Work that requires testing or inspecting.
 5. Where quality-control services are indicated as Contractor's responsibility, the Contractor shall submit a certified written report, in triplicate to the Commissioner, of each quality-control service.
 6. Testing and inspecting requested by the Contractor and not required by the Contract Documents are Contractor's responsibility.
 7. The Contractor shall submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. **Manufacturer's Field Services:** Where indicated, the Contractor shall engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Results shall be submitted in writing as specified in Section 01 33 00 SUBMITTAL PROCEDURES.
- D. **Retesting/Re-inspecting:** Regardless of whether original tests or inspections were the Contractor's responsibility, the Contractor shall provide quality-control services, including retesting and re-inspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- E. **Associated Services:** The Contractor shall cooperate with entities performing required tests, inspections, and similar quality-control services, and shall provide reasonable auxiliary services as requested. The Contractor shall notify the testing agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist testing entity in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 5. Delivery of samples to testing entities.
 6. Design mix proposed for use for material mixes that require control by the testing entity.
 7. Security and protection for samples and for testing and inspecting equipment at the Project site.
- F. **Coordination:** Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
 2. Coordinate and cooperate with the Commissioning Authority/Agent as applicable for start-up, inspection and functional testing in the implementation of the Commissioning Plan.
- G. **Manufacturer's Directions:** Where the Specifications provide that the manufacturer's directions are to be used, such printed directions shall be submitted to the Commissioner.
- H. **Inspection of Material:** In the event that the Specifications require the Contractor to engage the services of an entity to witness and inspect any material especially manufactured or prepared for use in or part of the permanent construction, such entity shall be subject to prior written approval by the Commissioner.
1. **NOTICE** - The Contractor shall give notice in writing to the Commissioner sufficiently in advance of its intention to commence the manufacture or preparation of materials especially manufactured or



prepared for use in or as part of the permanent construction. Such notice shall contain a request for inspection, the date of commencement and the expected date of completion of the manufacture or preparation of materials. Upon receipt of such notice, the Commissioner will arrange to have a representative present at such times during the manufacture as may be necessary to inspect the materials, or the Commissioner will notify the Contractor that the inspection will be made at a point other than the point of manufacture, or the Commissioner will notify the Contractor that inspection will be waived.

- I. **No Shipping Before Inspection:** The Contractor shall comply with the foregoing before shipping any material.
- J. **Certificate of Manufacture:** When the Commissioner so requires, the Contractor shall furnish to the Commissioner authoritative evidence in the form of Certificates of Manufacture that the materials to be used in the work have been manufactured and tested in conformity with the Specifications. These certificates shall include copies of the results of physical tests and chemical analyses where necessary, that have been made directly on the product, or on similar products being fabricated by the manufacturer. This may include such approvals as B.S.A., M.E.A., B.E.C. Advisory Board, etc.
- K. **Acceptance:** When materials or manufactured products shall comprise such quantity that it is not practical to make physical tests or chemical analyses directly on the product furnished, a certificate stating the results of such tests or analyses of similar materials which were concurrently produced may, at the discretion of the Commissioner, be considered as the basis for the acceptance of such material or manufactured product.
- L. **Testing Compliance:** The testing personnel shall make the necessary inspections and tests, and the reports thereof shall be in such form as will facilitate checking to determine compliance with the Specifications, indicating thereon all analyses and/or test data and interpreted results thereof.
- M. **Reports:** Six (6) copies of the reports shall be submitted and authoritative certification thereof must be furnished to the Commissioner as prerequisite for the acceptance of any material or equipment.
- N. **Rejections:** If, in making any test, it is ascertained by the Commissioner that the material or equipment does not comply with the Specifications, the Contractor will be notified thereof, and will be directed to refrain from delivering said materials or equipment, or to promptly remove it from the site or from the work and replace it with acceptable material at no additional cost to the City.
- O. **Furnish Designated Materials:** Upon rejection of any material or equipment submitted as the equivalent of that specifically named in the Specifications, the Contractor shall immediately proceed to furnish the designated material or equipment.

1.8 APPROVAL OF MATERIALS:

- A. **Local Laws:** All materials, appliances and types or methods of construction shall be in accordance with the Specifications and shall in no event be less than that necessary to conform to the requirements of the New York City Construction Codes, Administrative Code and Charter of the City of New York.
- B. **Approval of Manufacturer:** The names of proposed manufacturers, material suppliers, and dealers who are to furnish materials, fixtures, equipment, appliances or other fittings shall be submitted to the Commissioner for approval, as early as possible, to afford proper review and analysis. No manufacturer will be approved for any materials to be furnished under the Contract unless it shall have a plant of ample capacity and shall have successfully produced similar products. All approvals of materials and equipment that are legally required by the New York City Construction Codes and other governing Authorities must be obtained prior to installation.



- C. All Materials, fixtures, fittings, supplies and equipment furnished under the Contract shall be new and unused, except as approved by the Commissioner, and of standard first-grade quality and of the best workmanship and design. The City of New York encourages the use of recycled products where practical.
- D. **INFORMATION TO SUPPLIERS** - In asking for prices on materials under any item of the Contract, the Contractor shall provide the manufacturer or dealer with such complete information from the Specifications and Contract Drawings as may in any case be necessary, and in every case the Contractor shall inform the manufacturer or dealer of all the General Conditions and requirements herein contained.

1.9 SPECIAL INSPECTIONS:

A. SPECIAL INSPECTIONS:

1. Inspection of selected materials, equipment, installation, fabrication, erection or placement of components and connections made during the progress of the Work to ensure compliance with the Contract Documents and provisions of the New York City Construction Codes, shall be made by a Special Inspector. The City of New York will retain the services of the Special Inspector and bear the costs for the performance of Special Inspections in compliance with NYC Construction Codes requirements or as additionally may be called for in the project specifications, except as noted below for Form TR-3: Technical Report for Concrete Design Mix. The Special Inspector shall be an entity compliant with the requirements of the New York City Construction Codes. The Contractor shall notify the relevant Special Inspector in writing at least 72 hours before the commencement of any work requiring special inspection.
2. Form TR3: Technical Report Concrete Design Mix: The Contractor shall be responsible for, and bear all costs associated with the filing and securing of approvals, if any, for Form TR3: Technical Report Concrete Design Mix, including, but not limited to, engaging the services of a New York City licensed Concrete Testing Lab for the review and approval of concrete design mix, testing, signatures and professional seals, etc., compliant with NYC Department of Buildings requirements, for each concrete design mix.
3. The Contractor shall notify the relevant Special Inspector in writing at least 72 hours before the commencement of any work requiring Special Inspection. The Contractor shall be responsible for, and bear related costs to assure that all construction or work shall remain accessible and exposed for inspection purposes until the required inspection is completed.
4. Inspections and tests performed under "Special Inspection" shall not relieve the Contractor of the responsibility to comply with the Contract Documents, and that there is no warranty given to the Contractor by the City of New York in connection with such inspection and tests or certifications made under "Special Inspections".
5. The Contractor must coordinate with the Resident Engineer or DDC Project Manager to provide access and schedule the work for inspection by the Special Inspector.

1.10 INSPECTIONS BY OTHER CITY AGENCIES:

- A. **Letter of Completion:** Just prior to substantial completion of this Project, the Commissioner will file with the Department of Buildings, an application for a Letter of Completion or a Certificate of Occupancy for the structure.
- B. **Final Inspections:** In connection with the above mentioned application for a Letter of Completion or a Certificate of Occupancy and before certificates of final payments are issued, each Contractor will be required to arrange for all applicable final inspections by the inspection staff of the Department of Buildings, Fire Department or other Governmental Agencies having jurisdiction, and secure all reports, sign offs, certificates, etc., by such inspection staff or other governmental agencies, in order that a Letter of Completion or Certificate of Occupancy can be issued promptly.



1.11 CERTIFICATES OF APPROVAL:

- A. Responsibility: Each Contractor shall be responsible for and shall obtain all final approvals for the work installed under its Contract in the form of such certificates that are required by all governmental agencies having jurisdiction over the work of the Contract.
- B. Transmittal: All such certificates shall be forwarded to the Commissioner through the Resident Engineer.

1.12 ACCEPTANCE TESTS:

- A. Government Agencies: All equipment and appliances furnished and installed under the Contract shall conform with the requirements of the Specifications, and shall in no event be less than that necessary to comply with the minimum requirements of the law and all of the governmental agencies having jurisdiction.
- B. Notice of Tests: Whenever the Specifications and/or any governmental agency having jurisdiction requires the acceptance test, the Contractor shall give written notice to all concerned of the time when these tests will be conducted.
- C. Energy: The City will furnish all energy, fuel, water and light required for tests.
- D. Labor and Materials: The Contractor shall furnish labor and all other material and instruments necessary to conduct the acceptance tests at no additional cost to the City.
- E. Certificates: The final acceptance by the Commissioner shall be contingent upon the Contractor delivering to the Commissioner all necessary certificates evidencing compliance in every respect with the requirements of the regulatory agencies having jurisdiction.
- F. Results: If the results of tests and Special Inspections indicate that the material or procedures do not meet requirements as set forth on the Contract Drawings or in the Specifications or are otherwise unsatisfactory, the Contractor shall only proceed as directed by the Resident Engineer. Additional costs resulting from retesting, re-inspecting, replacing of material and/or damage to the Work and/or Work of other Contractors, and any delay caused to the schedule, shall be borne by the Contractor.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION

3.1 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, the Contractor shall repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.



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END OF SECTION 01 40 00

QUALITY REQUIREMENTS
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**SECTION 01 42 00
REFERENCES**

PART I – GENERAL

1.1 RELATED DOCUMENTS:

The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 DEFINITIONS:

REFER TO THE ADDENDUM, ARTICLE 2 FOR ADDITIONAL DEFINITIONS AND REVISIONS TO THE CONTRACT AND SPECIFICATIONS

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. "APPROVED," ETC. - "Approved," "acceptable," "satisfactory," and words of similar import shall mean and intend approved, acceptable or satisfactory to the Commissioner.
- C. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.
- D. DIRECTED," "REQUIRED," ETC.- Wherever reference is made in the Contract to the work or its performance, the terms "directed," "required," "permitted," "ordered," "designated," "prescribed," "determined," and words of similar import shall, unless expressed otherwise, imply the direction, requirements, permission, order, designation or prescription of the Commissioner.
- E. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings.



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1.3 CODES, AGENCIES AND REGULATIONS:

A.D.A.A.G.	Americans with Disabilities Act (ADA) – Architectural Barriers Act (ABA)
B.G.& E.	Bureau of Gas and Electricity of the City of New York
B.S.& A.	New York City Board of Standards and Appeals
DOE	Department of Energy
E.C.C.C.N.Y.S.	Energy Conservation Construction Code of New York State
EPA	Environmental Protection Administration
N.Y.C.C.C.	New York City Construction Codes – comprised of New York City Plumbing Code New York City Building Code New York City Mechanical Code New York City Fuel Gas Code
N.Y.S.D.O.L	New York State Department of Labor
N.Y.C.D.E.P	New York City Department of Environmental Protection
N.Y.C.E.C.	New York City Electrical Code
N.Y.C.E.C.C	New York City Energy Conservation Code
N.Y.C.F.C	New York City Fire Code
N.Y.S...D.E.C.	New York State Department of Environmental Conservation
O.S.H.A.	Occupational Safety & Health Administration

1.4 INDUSTRY STANDARDS:

- A. **STANDARD REFERENCES** – Unless otherwise specifically indicated in the Contract Documents, whenever reference is made to the furnishing of materials or testing thereof that conforms to the standards of any technical society, organization or body, it shall be construed to mean the latest standard, code, specification adopted and published by that technical society, organization or body, as of the date of the bid opening, unless the provisions of the New York City Construction Codes adopts a different or earlier dated version of such standard.
- B. **APPLICABILITY OF STANDARDS:** Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect, to the extent referenced, as if bound or copied directly into the Contract Documents. Such standards are made a part of the Contract Documents by reference.
- C. **CONFLICTING REQUIREMENTS:** Where compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantity or quality, comply with the most stringent requirements. Immediately refer uncertainties, and requirements that are different but apparently equal, to the Commissioner in writing for a decision before proceeding.
- D. **STANDARD SPECIFICATIONS** - When no reference is made to a code, standard or specification, the Standard Specifications of the ASTM or the AIEE, as the case may be, shall govern.
- E. **REFERENCES** - Reference to a technical society, organization or body may be made in the Specifications by abbreviations. Abbreviations and acronyms used in the Specifications and other Contract Documents mean the associated name. The following names are subject to change and are



believed, but are not assured, to be accurate and up-to-date as of the Issue Date of the Contract Documents.

AA	Aluminum Association, Inc. (The)
AAADM	American Association of Automatic Door Manufacturers
AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
AATCC	American Association of Textile Chemists and Colorists (The)
ABAA	Air Barrier Association of America
ABMA	American Bearing Manufacturers Association
ACI	ACI International (American Concrete Institute)
ACPA	American Concrete Pipe Association
AEIC	Association of Edison Illuminating Companies, Inc. (The)
AF&PA	American Forest & Paper Association
AGA	American Gas Association
AGC	Associated General Contractors of America (The)
AGMA	American Gear Manufacturer Association
AHA	American Hardboard Association (Now part of CPA)
AHAM	Association of Home Appliance Manufacturers
AI	Asphalt Institute
AIA	American Institute of Architects (The)
AIEE	American Institute of Electrical Engineers
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ALCA	Associated Landscape Contractors of America (Now PLANET - Professional Landcare Network)



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ALSC	American Lumber Standard Committee, Incorporated
ALI	Automotive Lift Institute
AMCA	Air Movement and Control Association International, Inc.
ANSI	American National Standards Institute
AOSA	Association of Official Seed Analysts, Inc.
APA	APA - The Engineered Wood Association
APA	Architectural Precast Association
API	American Petroleum Institute
ARI	Air-Conditioning & Refrigeration Institute
ARMA	Asphalt Roofing Manufacturers Association
ASA	American Standards Association
ASAE	American Society of Agricultural Engineers
ASCE/SEI	American Society of Civil Engineers, Structural Engineering Institute
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASSE	American Society of Sanitary Engineering
ASTM	ASTM International (American Society for Testing and Materials International)
AWCI	AWCI International (Association of the Wall and Ceiling Industry International)
AWCMA	American Window Covering Manufacturers Association (Now WCSC)
AWI	Architectural Woodwork Institute
AWPA	American Wood-Preservers' Association
AWSC	American Welding Society
AWWA	American Water Works Association
BHMA	Builders Hardware Manufacturers Association
BIA	Brick Industry Association (The)



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BICSI	BICSI
BIFMA	BIFMA International (Business and Institutional Furniture Manufacturer's Association International)
BISSC	Baking Industry Sanitation Standards Committee
CIBSE	Chartered Institute of Building Services Engineers
CCC	Carpet Cushion Council
CDA	Copper Development Association
CEA	Canadian Electricity Association
CFFA	Chemical Fabrics & Film Association, Inc.
CGA	Compressed Gas Association
CGSB	Canadian General Standards Board
CIMA	Cellulose Insulation Manufacturers Association
CIPRA	Cast Iron Pipe Research Association
CISCA	Ceilings & Interior Systems Construction Association
CISPI	Cast Iron Soil Pipe Institute
CLFMI	Chain Link Fence Manufacturers Institute
CPA	Composite Panel Association
CPPA	Corrugated Polyethylene Pipe Association
CPSC	Consumer Product Safety Commission
CRI	Carpet & Rug Institute (The)
CRSI	Concrete Reinforcing Steel Institute
CSA	Canadian Standards Association
CSI	Cast Stone Institute
CSI	Construction Specifications Institute (The)
CSSB	Cedar Shake & Shingle Bureau
CTI	Cooling Technology Institute (Formerly: Cooling Tower Institute)
DASMA	Door and Access Systems Manufacturer's Association International



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DHI	Door and Hardware Institute
DOC	U.S. Department of Commerce – National Institute of Standards and Technology
EIA	Electronic Industries Alliance
DOJ	U.S. department of Justice
EIMA	EIFS Industry Members Association
DOL	U.S. Department of Labor
EJCDC	Engineers Joint Contract Documents Committee
DOTn	U.S. Department of Transportation
EN	European Committee of Standards
EJMA	Expansion Joint Manufacturers Association, Inc.
ESD	ESD Association
EVO	Efficiency Valuation Organization
FEMA	Federal Emergency Management Agency
FIBA	Federation Internationale de Basketball Amateur (The International Basketball Federation)
FIVB	Federation Internationale de Volleyball (The International Volleyball Federation)
FMG	FM Global (Formerly: FM - Factory Mutual System)
FMRC	Factory Mutual Research (Now FMG)
FRSA	Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.
FSA	Fluid Sealing Association
FSC	Forest Stewardship Council
GA	Gypsum Association
GANA	Glass Association of North America
GRI	(Now GSI)
GS	Green Seal
GSI	Geosynthetic Institute



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HI	Hydraulic Institute
HI	Hydronics Institute
HMMA	Hollow Metal Manufacturers Association (Part of NAAMM)
HPVA	Hardwood Plywood & Veneer Association
HPW	H. P. White Laboratory, Inc.
HUD	U.S. Department of Housing and Urban Development
IAPMO	International Association of Plumbing and Mechanical Officials
IAS	International Approval Services (Now CSA International)
IBF	International Badminton Federation
ICC	International Code Council, Inc.
ICEA	Insulated Cable Engineers Association, Inc.
ICRI	International Concrete Repair Institute, Inc.
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers, Inc. (The)
IESNA	Illuminating Engineering Society of North America
IEST	Institute of Environmental Sciences and Technology
IGCC	Insulating Glass Certification Council
IGMA	Insulating Glass Manufacturers Alliance
ILI	Indiana Limestone Institute of America, Inc.
ISO	International Organization for Standardization
ISSFA	International Solid Surface Fabricators Association
ITS	Intertek
ITU	International Telecommunication Union
KCMA	Kitchen Cabinet Manufacturers Association
LMA	Laminating Materials Association (Now part of CPA)
LPI	Lightning Protection Institute

REFERENCES
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MBMA	Metal Building Manufacturers Association
MFMA	Maple Flooring Manufacturers Association, Inc.
MFMA	Metal Framing Manufacturers Association
MH	Material Handling (Now MHIA)
MHIA	Material Handling Industry of America
MIA	Marble Institute of America
MPI	Master Painters Institute
MSS	Manufacturers Standardization Society of The Valve and Fittings Industry Inc.
NAAMM	National Association of Architectural Metal Manufacturers
NACE	NACE International (National Association of Corrosion Engineers International)
NADCA	National Air Duct Cleaners Association
NAGWS	National Association for Girls and Women in Sport
NAIMA	North American Insulation Manufacturers Association
NBGQA	National Building Granite Quarries Association, Inc.
NCAA	National Collegiate Athletic Association (The)
NCMA	National Concrete Masonry Association
NCPI	National Clay Pipe Institute
NCTA	National Cable & Telecommunications Association
NEBB	National Environmental Balancing Bureau
NECA	National Electrical Contractors Association
NeLMA	Northeastern Lumber Manufacturers' Association
NEMA	National Electrical Manufacturers Association
NETA	InterNational Electrical Testing Association
NFHS	National Federation of State High School Associations
NFPA	NFPA (National Fire Protection Association)
NFRC	National Fenestration Rating Council



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NGA	National Glass Association
NHLA	National Hardwood Lumber Association
NLGA	National Lumber Grades Authority
NIS	National Institute of Standards and Technology
NOFMA	NOFMA: The Wood Flooring Manufacturers Association (Formerly: National Oak Flooring Manufacturers Association)
NRCA	National Roofing Contractors Association
NRMCA	National Ready Mixed Concrete Association
NSF	NSF International (National Sanitation Foundation International)
NSSGA	National Stone, Sand & Gravel Association
NTMA	National Terrazzo & Mosaic Association, Inc. (The)
NTRMA	National Tile Roofing Manufacturers Association (Now TRI)
NWWDA	National Wood Window and Door Association (Now WDMA)
OPL	Omega Point Laboratories, Inc. (Acquired by ITS - Intertek)
PCI	Precast / Pre-stressed Concrete Institute
PDCA	Painting & Decorating Contractors of America
PDI	Plumbing & Drainage Institute
PGI	PVC Geomembrane Institute
PLANET	Professional Landcare Network (Formerly: ACLA - Associated Landscape Contractors of America)
PPS	Power Piping Society
PTI	Post-Tensioning Institute
RCSC	Research Council on Structural Connections
RFCI	Resilient Floor Covering Institute
RIS	Redwood Inspection Service
RMI	Rack Manufacturers Institute
RTI	(Formerly: NTRMA - National Tile Roofing Manufacturers Association) (Now TRI)



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SAE	SAE International
SCAQMD	South Coast Air Quality Management District
SCS	Scientific Certification System
SDI	Steel Deck Institute
SDI	Steel Door Institute
SEFA	Scientific Equipment and Furniture Association
SGCC	Safety Glazing Certification Council
SHBI	Steel Heating Boiler Institute
SIA	Security Industry Association
SIGMA	Sealed Insulating Glass Manufacturers Association (Now IGMA)
SJI	Steel Joist Institute
SMA	Screen Manufacturers Association
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
SMPTE	Society of Motion Picture and Television Engineers
SPFA	Spray Polyurethane Foam Alliance (Formerly: SPI/SPFD - The Society of the Plastics Industry, Inc.; Spray Polyurethane Foam Division)
SPIB	Southern Pine Inspection Bureau (The)
SPRI	Single Ply Roofing Industry
SSINA	Specialty Steel Industry of North America
SSPC	SSPC: The Society for Protective Coatings
STI	Steel Tank Institute
SWI	Steel Window Institute
SWRI	Sealant, Waterproofing, & Restoration Institute
TCA	Tile Council of America, Inc.
TIA/EIA	Telecommunications Industry Association/Electronic Industries Alliance
TMS	The Masonry Society



TPI	Truss Plate Institute, Inc.
TPI	Turfgrass Producers International
TRI	Tile Roofing Institute (Formerly: RTI - Roof Tile Institute)
UL	Underwriters Laboratories Inc.
ULC	Underwriters Laboratories of Canada
UNI	Uni-Bell PVC Pipe Association
USAV	USA Volleyball
USC	United States Code
USGBC	U.S. Green Building Council
USITT	United States Institute for Theatre Technology, Inc.
WASTEC	Waste Equipment Technology Association
WCLIB	West Coast Lumber Inspection Bureau
WCMA	Window Covering Manufacturers Association (Now WCSC)
WCSC	Window Covering Safety Council (Formerly: WCMA - Window Covering Manufacturers Association)
WDMA	Window & Door Manufacturers Association (Formerly: NWWDA - National Wood Window and Door Association)
WI	Woodwork Institute (Formerly: WIC - Woodwork Institute of California)
WIC	Woodwork Institute of California (Now WI)
WMMPA	Wood Moulding & Millwork Producers Association
WRI	Wire Reinforcement Institute, Inc.
USEPA	United States Environmental Protection Agency
WSRCA	Western States Roofing Contractors Association
WWPA	Western Wood Products Association

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)



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END OF SECTION 01 42 00

REFERENCES
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SECTION 01 50 00
TEMPORARY FACILITIES, SERVICES AND CONTROLS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This section includes the following:
1. Temporary Water System
 2. Temporary Sanitary Facilities
 3. Temporary Electric Power, Temporary Lighting System, And Site Security Lighting:
 4. Temporary Heat
 5. Dewatering Facilities And Drains
 6. Temporary Field Office for Contractor
 7. Resident Engineer's Office
 8. Material Sheds
 9. Temporary Enclosures
 10. Temporary Partitions
 11. Temporary Fire Protection
 12. Work Fence Enclosure
 13. Rodent and Insect Control
 14. Plant Pest Control Requirements
 15. Project Identification Signage
 16. Security Guards/Fire Guards on Site
 17. Project Sign and Rendering
 18. Safety

1.3 RELATED SECTIONS: include without limitation the following:

- A. Section 01 10 00 SUMMARY
B. Section 01 42 00 REFERENCES
C. Section 01 54 11 TEMPORARY ELEVATORS AND HOISTS
D. Section 01 54 23 TEMPORARY SCAFFOLDS AND SWING STAGING
E. Section 01 77 00 CLOSE OUT PROCEDURES

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Permanent Enclosure: As determined by the Commissioner, permanent or temporary roofing that is complete, insulated, and weather tight; exterior walls which are insulated and weather tight; and all openings that are closed with permanent construction or substantial temporary closures.



- C. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.5 SUBMITTALS:

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Reports: Submit reports of tests, inspections, meter readings and similar procedures for temporary use.

1.6 PROJECT CONDITIONS:

- A. Temporary Use of Permanent Facilities and Services: The Contractor responsible for the installation of each permanent facility, services, and controls shall be responsible for the operation, maintenance, and protection of each permanent facility and service while in use during construction before Final Acceptance by the City, regardless of previously assigned responsibilities.
- B. Install, operate, maintain and protect temporary facilities and controls.
1. Keep temporary services and facilities clean and neat in appearance.
 2. Operate temporary services in a safe and efficient manner.
 3. Relocate temporary services and facilities as needed as Work progresses.
 4. Do not overload temporary services and facilities or permit them to interfere with progress.
 5. Provide necessary fire prevention measures.
 6. Do not allow hazardous, dangerous or unsanitary conditions, or public nuisances to develop or persist on-site.

1.7 NON-REGULAR WORK HOURS (OVERTIME):

- A. The Contractor responsible for the installation of each permanent facility, services, and controls shall provide the temporary services, facilities and controls set forth in this Section during other than regular working hours if the Drawings and/or the Specifications indicate that the Work, or specific components thereof, must be performed during other than regular working hours. In such case, all costs for the provision of temporary services, facilities and controls during other than regular working hours shall be deemed included in the total Contract Price.
- B. The Contractor responsible for the installation of each permanent facility, services, and controls shall provide the temporary services, facilities and controls set forth in this Section during other than regular working hours if a change order is issued directing the Contractor to perform the Work, or specific components thereof, during other than regular working hours. In such case, compensation for the provision of temporary services, facilities and controls during other than regular working hours shall be provided through the change order.

1.8 SERVICES BEYOND COMPLETION DATE:

- A. The Contractor responsible for the installation of each permanent facility, services, and controls shall provide the temporary services, facilities and controls set forth in this Section until the date on which it completes all required work at the site, including all punch list work,



as certified in writing by the Resident Engineer, or earlier if so directed in writing by the Commissioner. The Contractor shall provide such temporary services, facilities and controls even if completion of all required work at the site occurs after the time fixed for such completion in Schedule A.

PART II – PRODUCTS

2.1 MATERIALS:

- A. Provide undamaged materials in serviceable condition and suitable for use intended.
- B. Tarpaulins: Waterproof, fire-resistant UL labeled with flame spread rating of 15 or less. For temporary enclosures, provide translucent, nylon-reinforced, laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.
- C. Water: Potable and in compliance with requirements of the Department of Environmental Protection.

2.2 EQUIPMENT:

- A. Provide undamaged equipment in serviceable condition and suitable for use intended.
- B. Water Hoses: Heavy-duty abrasive-resistant flexible rubber hoses, 100 feet (30 m) long with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.
- C. Electric Power Cords: Grounded extension cords.
 - 1. Provide hard-service cords where exposed to abrasion or traffic.
 - 2. Provide waterproof connectors to connect separate lengths of electric cords where single lengths will not reach areas of construction activity.
 - 3. Do not exceed safe length-voltage ratio.
- D. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART III – EXECUTION:

3.1 INSTALLATION, GENERAL:

- A. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities as approved by the Resident Engineer.

3.2 TEMPORARY WATER SYSTEM:

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.2 A

- A. TEMPORARY WATER SYSTEM - NEW FACILITIES: During construction, the Plumbing Contractor shall furnish a Temporary Water System as set forth below.
 - 1. Immediately after the Commissioner has issued an order to start work, the GC Contractor shall file an application with the Dept. of Environmental Protection for the schedule of charges for water use during construction. The GC Contractor will be responsible for payment of water charges.



2. Immediately after the Commissioner has issued an order to start work, the Plumbing Contractor shall file an application with the Department of Environmental Protection's Bureau of Water Supply and obtain a permit to install the temporary water supply system. The system shall be installed and maintained for the use of all Contractors and his/ her subcontractors. A copy of the above mentioned permit shall be filed with the Commissioner. The Plumbing Contractor shall provide temporary water main, risers and waste stacks as directed and install on each floor, outlets with two (2) 3/4" hose valve connections over a barrel installed on a steel pan. The Plumbing Contractor shall provide drains from the pans to the stack and house sewer and hose bibs to drain the water supply risers and mains. During winter months, the Plumbing Contractor shall take the necessary precautions to prevent the temporary water system from freezing. The Plumbing Contractor shall provide repairs to the temporary water supply system for the duration of the project until said temporary system is dismantled and removed.
3. Disposition of Temporary Water System: The Plumbing Contractor shall be responsible for dismantling the temporary water system when no longer required for the construction operations, or when replaced by the permanent water system installed for the project, or as otherwise directed by the Resident Engineer. All repair work resulting from the dismantling of the temporary water system shall be the responsibility of the GC Contractor .

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.2 E

B. TEMPORARY WATER SYSTEM - PROJECTS IN EXISTING FACILITIES:

1. When approved by the Commissioner, use of existing water service system will be permitted for temporary water service during construction, as long as system is cleaned and maintained in a condition acceptable to the Commissioner. At Substantial Completion, the Plumbing Contractor shall restore the existing water system to conditions existing before initial use.
2. The Plumbing Contractor shall be responsible for all repairs to the existing water service system permitted to be used for temporary water service during construction. The GC Contractor shall be responsible to maintain the facility in a clean condition on a daily basis, acceptable to the Commissioner.
3. The GC Contractor will be responsible for payment of water charges as directed by the Commissioner. Billing will be in accordance with the Department of Environmental Protection schedule of charges for Building Purposes.

C. WASH FACILITIES: The Plumbing Contractor shall install wash facilities supplied with potable water at convenient locations for personnel involved in handling materials that require wash-up for a healthy and sanitary condition.

1. Dispose of drainage properly.
2. Supply cleaning compounds appropriate for each condition.
3. Include safety showers, eyewash fountains and similar facilities for the convenience, safety and sanitation of personnel.

D. DRINKING WATER FACILITIES: The Plumbing Contractor shall provide drinking water fountains or containerized tap-dispenser bottled-drinking water units, complete with paper cup supplies. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 deg. F (7 to 13 deg. C).

E. OVERTIME USE: Whenever any Contractor(s) work before or after the regular work hours hereinafter specified under Subparagraph 3.2 F, or on a Saturday, Sunday or Holiday of any Contract, such Contractor(s) shall pay the Plumbing Contractor for the activation of the temporary water system and toilet facility services during such overtime periods. When more than one (1) Contractor is involved in overtime work, the costs thereof shall be prorated as determined by the Resident Engineer. When overtime is required by any or all Contractors on the work, the



provisions for payment for regular time use of the temporary water supply system as specified in Subparagraph 3.2 F shall apply.

- F. **ACTIVATION** - The Plumbing Contractor shall bear the cost of keeping the temporary water supply system activated from a period of time 15 minutes before the established starting time of that trade which starts work earliest in the morning, to 15 minutes after the established quitting time of that trade which stops work latest in the evening. This applies to every day in the week which is established as a regular working day for aforementioned trades and holds until completion and final acceptance of the work of the Plumbing Contractor or until the services are terminated by instructions from the Commissioner.

3.3 TEMPORARY SANITARY FACILITIES:

- A. The GC Contractor shall provide for toilets, wash facilities and drinking water fixtures in compliance with regulations and health codes for type, number, location, operation and maintenance of fixtures and facilities. Provide toilet tissue, paper towels, paper cups and similar disposable materials as appropriate for each facility, and provide covered waste containers for used materials.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.3.B

B. SELF-CONTAINED TOILET UNITS:

1. The GC Contractor shall provide temporary single-occupant toilet units of the chemical, aerated re-circulation, or combustion type for use by all construction personnel. Units shall be properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material. Quantity of toilet units shall comply with the latest OSHA regulations.
2. **Toilets:** Install separate self-contained toilet units for male and female personnel. Shield toilets to ensure privacy.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.3.C

C. EXISTING TOILETS:

1. **TOILET FACILITIES:** When approved by the Commissioner, the GC Contractor shall arrange for the use of existing toilet facilities by all personnel during the execution of the work. The Contractor shall be responsible to clean and maintain facilities in a condition acceptable to the Resident Engineer and, at completion of construction, to restore facilities to their condition at the time of initial use.
2. **MAINTENANCE** - The GC Contractor shall maintain the temporary toilet facilities in a clean and sanitary manner and make all necessary repairs.
3. **NUISANCES** - The Contractors shall not cause any sanitary nuisance to be committed by its employees in or about the work, and shall enforce all sanitary regulations of the City and State Health Authorities.

3.4 TEMPORARY ELECTRIC POWER, TEMPORARY LIGHTING SYSTEM, AND SITE SECURITY LIGHTING:

- A. **SCOPE:** This Section sets forth the General Conditions and procedures relating to Temporary Electric Power, Temporary Lighting System and Site Security Lighting during the construction period, and is applicable to, and binding on, all Contracts insofar as they are affected.
- B. **TEMPORARY ELECTRIC POWER:**
The Electrical Contractor shall provide and maintain Temporary Electric Power service and distribution system of sufficient size, capacity and power characteristics required for construction



operations for all Contracts, including but not limited to power for Temporary Lighting System, Site Security Lighting, construction equipment, hoists and temporary elevators and all field offices. Temporary Electric Power shall be provided as follows:

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4 B (1)

1. CONNECTION TO UTILITY LINES:

- a. Temporary Electric Power Service for use during construction shall be provided as follows: The Electrical Contractor shall make all necessary arrangements with the Public Utility Company and pay all charges for the Temporary Electric Power system. The Electrical Contractor shall include in its total Contract Price any charges for Temporary Electric Power, including charges that may be made by the Public Utility Company for extending its electrical facilities, and for making final connections. The Electrical Contractor shall make payment directly to the Public Utility Company.
- b. APPLICATIONS FOR METER: The Electrical Contractor shall make application to the Public Utility Company and sign all documents necessary for, and pay all charges incidental to, the installation of a watt hour meter or meters for Temporary Electric Power. The Electrical Contractor shall pay to the Public Utility Company, all bills for Temporary Electric energy used throughout the work, as they become due.
- c. SERVICE AND METERING EQUIPMENT - The Electrical Contractor shall furnish and install, at a suitable location on the site, approved service and metering equipment for the Temporary Electric Power System, ready for the installation of the Public Utility Company's metering devices. The temporary service mains to and from the metering location shall be not less than 100 Amperes, 3-phase, 4-wire and shall be of sufficient capacity to take care of all demands for all construction operations and shall meet all requirements of the NYCEC.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4 B (2)

2. CONNECTION TO EXISTING ELECTRICAL POWER SERVICE:

- a. When approved by the Commissioner, electrical power service for the Temporary Lighting System and for the operation of small tools and equipment less than 1/4 horsepower may be taken from the existing electric distribution system if the existing system is of adequate capacity for the temporary power load. The Electrical Contractor shall cooperate and coordinate with the facility custodian, so as not to interfere with the normal operation of the facility.
- b. There will be no charge for the electrical energy consumed.
- c. The Electrical Contractor shall provide, maintain and pay all costs for separate temporary electric power for any temporary power for equipment larger than 1/4 horsepower. When directed by the Commissioner, the Electrical Contractor shall remove its own temporary power system.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4 B (3)

3. ELECTRICAL GENERATOR POWER SERVICE:

- a. When connection to Utility Lines or existing facility electric service is not available or is not adequate to supply the electric power need for construction operations, the



Electrical Contractor shall provide self-contained generators to provide power beyond that available.

- b. Pay for all energy consumed in the progress of the Work, exclusive of that available from the existing facility or Utility Company.
- c. Provide for control of noise from the generators.
- d. Comply with the Ultra Low Sulfur Fuel in Non-Road Vehicles requirements as set forth in Article 5.4 of the Contract.

C. USE OF COMPLETED PORTIONS OF THE ELECTRICAL WORK:

1. **USE OF MAIN DISTRIBUTION PANEL:** As soon as the permanent electric service feeders and equipment, metering equipment and main distribution panel are installed and ready for operation, the Electrical Contractor shall have the temporary lighting and power system changed over from the temporary service points to the main distribution panel.
2. **COST OF CHANGE OVER -** The Electrical Contractor shall be responsible for all costs due to this change over of service and it shall also make application to the Public Utility Company for a watt hour meter to be set on the permanent meter equipment.
3. The requirements for temporary electric power service specified herein shall be adhered to after change over of service until final acceptance of the project.
4. **NO EXTRA COST -** The operation of the service and switchboard equipment shall be under the supervision of the Electrical Contractor, but this shall in no way be interpreted to mean the acceptance of such part of the installation or relieve the Contractor from its responsibility for the complete work or any part thereof. There shall be no additional charge for supervision by the Electrical Contractor.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB SECTION C.10

D. TEMPORARY LIGHTING SYSTEM:

1. The Electrical Contractor shall provide adequate service for the temporary lighting system, or a minimum of 100 Amperes, 3-phase, 4-wire service for the temporary lighting system, whichever is greater, and make all necessary arrangements with the Public Utility Company and pay all charges by them for the Temporary Lighting system
2. The Electrical Contractor shall furnish and connect to the metered service point, a Temporary Lighting System to illuminate the entire area where work is being performed and points adjacent to the work, with separately fused circuits for stairways and bridges. Control switches for stairway circuits shall be located near entrance on ground floor.
3. **ITEMS:** The Temporary Lighting System provided by the Electrical Contractor shall consist of wiring, fixtures, left-hand double sockets, (one (1) double socket for every 400 square feet, with one (1) lamp and one (1) three-prong outlet) lamps, fuses, locked type guards, pigtailed and any other incidental material. Additional details may be outlined in the detailed Specifications for the Electrical Work. Changes may be made, provided the full equivalent of those requirements is maintained.
4. The Temporary Lighting System shall be progressively installed as required for the advancement of the work under the various Contracts.
5. **RELOCATION:** Each Contractor requiring the relocation or extension of the original Temporary Lighting System that is not required due to the normal advancement of the work, as determined by the Resident Engineer, shall bear all costs thereof.
6. **PIGTAILS:** shall be furnished with left-hand sockets with locked type guards and 40 feet of rubber covered cable. The Electrical Contractor shall furnish and distribute a minimum of three (3) complete pigtailed to each Contractor. See the detailed Electrical Specifications for possible additional pigtail required.



7. **LAMPS:** The Electrical Contractor shall furnish and install one (1) complete set of lamps, including those for the trailers. Broken and burned out lamps in the general lighting system shall be replaced by the Electrical Contractor while those in the trailers shall be replaced by each Contractor using such equipment. All lamps shall be compact fluorescent.
8. **CIRCUIT PROTECTION:** The Electrical Contractor shall furnish and install GFI protection for the Temporary Lighting and Site Security Lighting Systems.
9. **ENERGIZING:** The Electrical Contractor shall keep the Temporary Lighting System energized from a period of time, 15 minutes before the established starting time of that trade, which starts work earliest in the morning to 15 minutes after the established quitting time of that trade which stops work latest in the evening. This applies to every day in the week which is established as a regular working day for any trade involved in the construction of this facility and holds until Substantial Completion and Final Acceptance of the work of the Electrical Contractor or until the services are terminated by instructions from the Commissioner.
10. **MAINTENANCE OF TEMPORARY LIGHTING SYSTEM:**
 - a. The Electrical Contractor shall maintain the Temporary Lighting System in good working order during the scheduled hours established.
 - b. The Electrical Contractor shall include in its total Contract Price all costs in connection with the Temporary Lighting System, including all costs for installation, maintenance and electric power.
11. **ADJUSTMENT IN CONTRACT PRICE FOR TEMPORARY LIGHTING MAINTENANCE:** In the event that the temporary lighting maintenance extends beyond the Contract time through no fault of the Electrical Contractor, as determined by the Commissioner, the additional maintenance cost will be in accordance with the requirements of the following paragraphs:
 - a. Payment for maintaining Temporary facilities when required will be made at the average hourly wage for electricians plus 69% of this rate, for each hour of work done upon order of the Resident Engineer. Payments will be included in partial estimates upon submission of detailed vouchers stating date, hour and time expended for each item of work.
 - b. The addition of 69% of the average hourly wage rate specified above shall be deemed as the total allowance for all profit and overhead and for any and all other costs and expenses of any nature whatsoever, including but not limited to allowance for insurance, workman's compensation, unemployment insurance and other supplementary benefits.
12. **REMOVAL OF TEMPORARY LIGHTING SYSTEM:** The temporary lighting system shall be removed by the Electrical Contractor when authorized by the Commissioner.
13. **HAND TOOLS:** The temporary lighting system shall not be used for power purposes, except that light hand tools not larger than 1/4 horsepower may be operated from such system by each Contractor and its subcontractors.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.4 E

- E. SITE SECURITY LIGHTING (FOR NEW CONSTRUCTION ONLY):**
1. The Electrical Contractor shall furnish, install and maintain a system of site security lighting, as herein specified, to illuminate the construction site of the project, and it shall be connected to and energized from the Temporary Lighting System. All costs in connection with site security lighting shall be deemed included in the total Contract Price.
 2. It is essential that the site security lighting system be completely installed and operating, at the earliest possible date. All Contractors must cooperate, coordinate and exert every effort to accomplish an early complete installation of the site security lighting system. After



- the system is installed and in operation, if a part of the system interferes with the work of any Contractor, that Contractor shall be completely responsible for the expense of removing, relocating and replacing all equipment necessary to reinstate the system to proper operating conditions.
3. The system shall consist of flood lighting by pole mounted guarded sealed-beam units. Floodlight units shall be mounted 16 feet above grade. Floodlights shall be spaced around the perimeter of the site to produce an illumination level of no less than one (1) foot candle around the perimeter of the site, as well as in any potentially hazardous area or any other area within the site that might be deemed by the Resident Engineer to require security illumination. The system shall be installed in a manner acceptable to the Resident Engineer. The first lighting unit in each circuit shall be provided with a photoelectric cell for automatic control. The photoelectric cell shall be installed as per manufacturer's recommendations.
 4. All necessary poles shall be furnished and installed by the Electrical Contractor.
 5. The site security lighting shall be kept illuminated at all times during the hours of darkness. The Electrical Contractor, at its own expense, shall keep the system in operation, and shall furnish and install all material necessary to replace all damaged or burned out parts.
 6. The Electrical Contractor shall be on telephone call alert for maintaining the system during the operating period stated above.
 7. All materials and equipment furnished under this section shall remain the property of the Electrical Contractor and shall be removed and disposed of by the Electrical Contractor upon completion of that phase of the project.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.5

3.5

TEMPORARY HEAT:

A. GENERAL:

1. Definition: The provision of Temporary Heat shall mean the provision of heat in order to permit construction to be performed in accordance with the Progress Schedule during all seasons of the year and to protect the work from the harmful effects of low temperature. In the event the building, or any portion thereof, is occupied during construction, the provision of Temporary Heat shall include the provision of heat to permit normal operations in such occupied areas.
 - a. The provision of Temporary Heat shall be in accordance with the temperature requirements set forth in Sub-Section 3.5C herein.
 - b. The provision of Temporary Heat shall include the provision of: 1) all fuel necessary and required, 2) all equipment necessary and required, and 3) all operating labor necessary and required. Operating labor shall mean that minimum force required for the safe day to day operation of the system for the provision of Temporary Heat and shall include, without limitation, heating maintenance labor and/or Fire Watch as required by NYC Fire Department regulations. Operating labor may be required seven (7) days per week and during other than normal working hours, for the period of time required by seasonal weather conditions.
 - c. In the event the building, or any portion thereof, is occupied and the Project involves the replacement, modification and/or shut down of the permanent heating system, or any key component thereof; and such system is a combined system which furnishes domestic hot water for the building occupants, the provision of Temporary Heat shall include the provision of domestic hot water at the same temperature as the system which is being replaced. Domestic hot water shall be provided in accordance with the phasing requirements set forth in the Contract Documents.



2. Responsibility: The Contractor responsible for the provision of Temporary Heat, including all expenses in connection therewith, shall be as set forth below:

a. Projects Involving Enclosure of the Building:

- 1) Prior to Enclosure - Until the Commissioner determines that the building has been enclosed, as set forth in Sub-Section 3.5B, each Contractor shall be responsible for the provision of its own Temporary Heat.
- 2) Post Enclosure - Once the Commissioner determines that the building, or any portion thereof, has been enclosed, as set forth in Sub-Section 3.5B, the HVAC Contractor shall be responsible for the provision of Temporary Heat by one or more of the following means: 1) by an existing heating system (if any), 2) by a permanent heating system which is being installed as part of the Project, or 3) by a temporary heating system(s).
- 3) The HVAC Contractor shall, within two (2) weeks of the kick-off meeting, submit to DDC for review its proposed plan to provide Temporary Heat. Such plan is subject to approval by the Resident Engineer. The HVAC Contractor shall provide Temporary Heat in accordance with the approved plan until written acceptance by the Commissioner of the work of all Contractors, including punch list work, unless directed otherwise in writing by the Commissioner. The responsibility of the HVAC Contractor provided for herein is subject to the exception set forth in Sub-Section 3.5A.2(b) herein.

b. Projects not involving Enclosure of the Building:

- 1) If the Project involves the installation of a new permanent heating system if one did not exist previously, or the replacement, modification and/or shut down of the existing permanent heating system, or any key component thereof, the HVAC Contractor shall be responsible for the provision of Temporary Heat, except as otherwise provided in Sub-Section 3.5H.3(b).2 herein.
- 2) If the Project does not involve the installation of a new permanent heating system if one did not exist previously, or the replacement, modification and/or shut down of the existing permanent heating system, or any key component thereof; there is no Contractor responsibility of the provision of Temporary Heat, unless otherwise specified in the Contract Documents. However, if the Commissioner, pursuant to Sub-Section 3.5 H.3(b).1 herein, determines that the provision of Temporary Heat is necessary due to special and/or unforeseen circumstances, the HVAC Contractor shall be responsible for the provision of Temporary Heat and such Contractor shall be paid for the same in accordance with Sub-Section 3.5 H.3(b).1 herein.

B. ENCLOSURE OF STRUCTURES:

1. Notification: The GC Contractor shall notify all other Contractors and the Resident Engineer at least 30 days prior to the anticipated date that the building(s) will be enclosed.
2. Commissioner Determination: The Commissioner shall determine whether the building, or any portion thereof, has been enclosed. As indicated in Sub-Section 3.5A.2 above, once the building has been enclosed, the HVAC Contractor shall be responsible for the provision of Temporary Heat. The Commissioner's determination with respect to building enclosure shall be based upon all relevant facts and circumstances, including without limitation, 1) whether the building meets the criteria set forth in Paragraph 3 below, and 2) whether the openings in the building, such as doorways and windows, have been sufficiently covered so as to provide reasonable heat retention and protection from the elements
3. Criteria for enclosure:
 - a. Roof Area:
 - 1) A building shall be considered to be roofed when the area to be roofed is covered by a permanent structure and all openings through the permanent



structure are covered and protected by temporary covers in Paragraph (c) below.

- 2) Intermediate floor structures of multi-floor buildings shall be considered to be roofed subject to the same requirements of the building roof.
- 3) The final roofing system need not be in place for the building or structure to be determined to be enclosed; provided, however, all openings through the permanent structure covering the roof must be covered and protected by temporary covers, as described in Paragraph (c) below.
- b. Walls: For the walls to be determined to be enclosed permanent exterior wall elements or facing material must be in place and all openings must be covered and protected by temporary covers, as described in Paragraph (c) below.
- c. Temporary Covers: In order to be acceptable, temporary covers must be securely fixed to prevent the entrance of rain, snow and direct wind. The minimum material requirements for temporary covers are as follows: 1) minimum 10 mil. plastic 2) minimum 12 ounce waterproof canvas tarpaulins, or 3) a minimum three-eighths (3/8)inch thickness exterior grade plywood.
- d. Temporary covers for openings shall be the responsibility of the GC Contractor and such work shall be deemed included in the Contract price.

C. TEMPERATURE REQUIREMENTS:

- 1. Unoccupied Buildings: The temperature requirement for the provision of Temporary Heat in unoccupied buildings shall be the GREATER of the following: 1) 50 degrees Fahrenheit, or 2) the temperature requirement for the particular type of work set forth in the Contract Documents.
- 2. Occupied Buildings: The temperature requirement for the provision of Temporary Heat in occupied buildings, or portions thereof, shall be the GREATER of the following: 68 degrees Fahrenheit or the temperature requirement for the particular type of work set forth in the Contract Documents.

D. DURATION:

- 1. The HVAC Contractor shall be required to provide Temporary Heat until the date on which it completes all required work at the site, including all punch list work, as certified in writing by the Resident Engineer, or earlier if so directed in writing by the Commissioner. The HVAC Contractor shall be responsible for the provision of Temporary Heat for the time specified herein, regardless of any delays in completion of the Project, including delays that result in the commencement of the provision of Temporary Heat during a season that is later than that which may have been originally anticipated. The HVAC Contractor shall include in its Total Contract Price all expenses in connection with the provision of Temporary Heat in accordance with the requirements specified herein.
- 2. The total Contract duration is set forth in consecutive calendar days in Schedule A of the Addendum. The Table set forth below indicates the number of full heating seasons that are deemed included in various contract durations, which are specified in consecutive calendar days (ccd)s. At a minimum, a full heating season shall extend from October 15th to April 15th.

Contract Duration	Full Heating Seasons Required
up to 360 ccds	1 full heating season
360 to 720 ccds	2 full heating seasons
more than 720 ccds	3 full heating seasons

E. METHOD OF TEMPORARY HEAT:



1. The method of temporary heat shall be in conformance with the New York City Fire Code and with all applicable laws, rules and regulations. Prior to implementation, such method shall be subject to the written approval of the Commissioner.
2. The method of temporary heat shall:
 - a. Not cause the deposition of dirt or smudges upon any finished work or cause any defacement or discoloration to the finished work.
 - b. Not be injurious or harmful to people or materials.
 - c. Portable fueled heating devices or equipment SHALL NOT BE ALLOWED for use as temporary heat other than construction-related curing or drying in conformance with the NYC Fire Code.
3. No open fires will be permitted.

F. TEMPORARY HEATING SYSTEM:

1. The temporary system for the provision of Temporary Heat provided by the HVAC Contractor following enclosure of the building shall be complete including, subject to provisions of paragraph E above, boilers pumps, radiators, space heaters, water and heating piping, insulation and controls. The temporary system for the provision of Temporary Heat shall be capable of maintaining the minimum temperature requirements set forth in Paragraph C above.

G. COORDINATION:

1. The GC Contractor shall coordinate with the HVAC Contractor in the work of providing Temporary Heat, and shall so coordinate its operations as to insure sufficient and timely performance of the work under all Contracts. The GC Contractor shall supply and pay for all water required and used in the building for the operation of the heating system(s) for the purpose of Temporary Heat. The GC Contractor shall include all expenses in connection with the supply of water for Temporary Heat in its Total Contract Price. During the period in which Temporary Heat in an enclosed building is being furnished and maintained by the HVAC Contractor, the GC Contractor shall provide proper ventilating and drying, open and close the windows and other openings when necessary for the proper execution of the work and also when directed by DDC. The GC Contractor shall maintain all permanent or temporary enclosures at its own expense.

H. USE OF PERMANENT HEATING SYSTEMS:

1. Use of Permanent Heating System for Temporary Heat after Building Enclosure
 - a. The HVAC Contractor shall provide all labor and materials to promptly furnish and set all required equipment and convectors and/or radiators, piping, valves, fitting, etc., in ample time for their use for the provision of Temporary Heat after enclosure of the building.
 - b. New portions of the permanent heating system that are used for furnishing Temporary Heat shall be left in near perfect condition when delivered to the City for operation. Any repairs required, other than for ordinary wear and tear on the equipment, shall be made by the HVAC Contractor at his/ her expense. The starting date for the warranty or guarantee period for such equipment shall be the date of Substantial Completion acceptance.
 - c. In the event that the HVAC Contractor does not advance the installation of the permanent heating system in sufficient time to permit its use for Temporary Heat as determined by DDC, the HVAC Contractor shall furnish and install a separate system for the provision of Temporary Heat as required to maintain the minimum temperature requirements set forth in Paragraph C above.
2. All equipment for the system for the provision of Temporary Heat shall be placed so as to comply with the requirements specified hereinbefore, and shall be connected, disconnected



and suitably supported and located so as to permit construction work, including finish work such as wall plastering and painting, to proceed. The installation of the system for the provision of Temporary Heat by the HVAC Contractor including the placing of ancillary system equipment, shall be coordinated with the operations of all Contractors so as to insure sufficient and timely performance of the work of all Contractors. Once the permanent heating system is operating properly, the HVAC Contractor shall remove all portions of the system for Temporary Heat which are not part of the permanent heating system.

3. Temporary Heat Allowance for Special Conditions or and/or Unforeseen Circumstances.
 - a. The City may establish an allowance in the HVAC Contract for payment of costs and expenses in connection with the provision of Temporary Heat as set forth herein. If established, the City will include an amount for such allowance on the Bid Form, and the Contractor shall include such allowance amount in its Total Contract Price. The HVAC Contractor shall only be entitled to payment from this allowance under the conditions and in accordance with the requirements set forth below. In the event this allowance or any portion thereof remains unexpended at the conclusion of the Contract, such allowance shall remain the sole property of the City. Should the amount of the allowance be insufficient to provide payment for the expenses specified below, the City will increase the amount of the allowance.
 - b. The allowance set forth herein may be utilized only under the conditions set forth below.
 1. In the event the Project does not involve the installation of a new permanent heating system if one did not exist previously, or the replacement, modification and/or shut down of the existing permanent heating system, or any key component thereof, and the Commissioner determines that the provision of Temporary Heat is necessary due to special and/or unforeseen circumstances, the HVAC Contractor shall be responsible for the provision of Temporary Heat, as directed by the Commissioner. The City shall pay such Contractor for all costs for labor, material, and equipment necessary and required for the same. Payment shall be made in accordance with Article 26 of the Contract, except that the cost of fuel shall be as set forth in Paragraph (c) below.
 2. In the event that after enclosure of the building, the Commissioner determines that (i) Contractors other than the HVAC Contractor have not sufficiently advanced the work of their contracts that is necessary and required to permit the HVAC Contractor to use the permanent or other heating equipment for the provision of Temporary Heat, and (ii) the HVAC Contractor does not bear any responsibility for such other Contractors' failure to advance the work, the City shall pay the HVAC Contractor for all differential costs for labor, material, and equipment necessary and required for the provision of a substitute system(s) for the provision of Temporary Heat or portions thereof in lieu of the permanent or other systems intended for Temporary Heat. Payment shall be made in accordance with Article 26 of the Contract, except that the cost of fuel shall be as set forth in Paragraph (c) below.
 3. In the event the Commissioner determines that there is a need for maintenance of the permanent heating system by the HVAC Contractor after written acceptance by the Commissioner of the work of all Contractors, and that the need for such maintenance is not the fault of the HVAC Contractor, the HVAC Contractor shall provide the required maintenance of the permanent heating system for the period of time directed by the Commissioner. The City shall pay the HVAC Contractor for the cost of direct labor and fuel necessary and required in connection with such maintenance, excluding the cost of any foremen or other supervision. Payment shall be made in accordance with Article 26 of the Contract, except that the cost of fuel shall be as set forth in Paragraph (c) below.



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- c. Payment for Fuel Costs - Payment from the allowance set forth herein for the cost of fuel necessary and required to operate the system for the provision of Temporary Heat or to maintain the permanent heating system under the conditions set forth in Paragraph b above shall be limited to the direct cost of such fuel. The HVAC Contractor shall not be entitled to any overhead and/or profit for such fuel costs. In order to receive payment for such fuel costs, the HVAC Contractor must present original invoices for the same. DDC reserves the right to furnish the required fuel.
- d. Deduction - In the event that any amount of the allowance set forth herein is expended for payment to the HVAC Contractor under the circumstances set forth in Paragraph b.(2) above, the Commissioner shall deduct and retain such amount out of moneys that are due and owing hereunder to the other Contractor(s) responsible for the failure to advance the work, as determined by the Commissioner. In the event the amount expended from the allowance exceeds the total sum due and owing to such other Contractor(s), such excess shall be paid to the City by such other Contractor(s) immediately upon demand.

I. RELATED ELECTRICAL WORK:

1. The Electrical Contractor shall be responsible for providing the items set forth below and shall include all expenses in connection with such items in its Total Contract Price. The Electrical Contractor shall provide such items promptly when required and shall in all respects coordinate its work with the GC Contractor and the HVAC Contractor in order to facilitate the provision of Temporary Heat by the HVAC Contractor.
 - a. The Electrical Contractor shall provide all labor, materials, equipment and power necessary and required to furnish and maintain any temporary or permanent electrical connections to all equipment specified to be connected as part of the work of his Contract.
 - b. The Electrical Contractor shall supply and pay for all power necessary and required for the operation of the system for the provision of Temporary Heat and/or the permanent heating system used for Temporary Heat by the HVAC Contractor. Such power shall be provided by the Electrical Contractor for the duration the HVAC Contractor is required to provide Temporary Heat, as set forth in Paragraph D above.
2. In providing the items set forth in Paragraph 1 above, the Electrical Contractor is advised that labor may be required seven (7) days a week and/or during other than normal working hours for the period of time required by seasonal weather conditions.

J. RELATED PLUMBING WORK:

1. The Plumbing Contractor shall be responsible for providing all labor, materials and equipment necessary and required to furnish and maintain all temporary or permanent connections to all equipment or plumbing outlets specified to be provided as part of the work of its Contract. The Plumbing Contractor shall include all expenses in connection with such items of work in its Total Contract Price. The Plumbing Contractor shall provide such items of work promptly when required and shall in all respects coordinate its work with the GC Contractor and the HVAC Contractor in order to facilitate the provision of Temporary Heat by the HVAC Contractor.
2. In the event portions of the permanent plumbing equipment furnished by the Plumbing Contractor as part of the work of his Contract are used for the provision of Temporary Heat by the HVAC Contractor, either during construction or prior to acceptance by the City of the complete plumbing system, the Plumbing Contractor shall be responsible to provide such plumbing equipment to the City in near perfect condition and shall make any repairs required, other than for ordinary wear and tear on the equipment, at its expense. The starting date for warranty and/or guarantee period for such plumbing equipment shall be the date of Substantial Completion acceptance by the City.



3. For Projects requiring the installation of new and/or modified gas service, as well as associated meter installations, the Plumbing Contractor shall promptly perform all required filings and coordination with the Utility Companies in order to expedite the installation, testing, and approval of the gas service and associated meter(s).

3.6 STORM WATER CONTROL, DEWATERING FACILITIES AND DRAINS:

A. PUMPING:

1. Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of storm water from heavy rainfall.
2. The GC Contractor shall furnish and install all necessary automatically operated pumps of adequate capacity with all required piping to run-off agencies, so as to maintain the excavation, cellar floor, pits and exterior depressions and excavations free from accumulated water during the entire period of construction and up to the date of final acceptance of work of the Contract.
3. All pumps shall be maintained at all times in proper working order.
4. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
5. Remove snow and ice as required to minimize accumulations.

3.7 TEMPORARY FIELD OFFICE FOR CONTRACTOR:

- A. Each Contractor shall establish a temporary field office for its own use at the site during the period of construction, at which readily accessible copies of all Contract Documents shall be kept.
- B. The field office shall be located where it will not interfere with the progress of any part of the work or with visibility of traffic control devices.
- C. **CONTRACTOR'S REPRESENTATIVE:** In charge of each office there shall be a responsible and competent representative of the Contractor, duly authorized to receive orders and directions and to put them into effect.
- D. Arrangements shall be made by each Contractor whereby its representative may be readily accessible by telephone.
- E. All temporary structures shall be of substantial construction and neat appearance, and shall be painted a uniform gray unless otherwise directed by the Commissioner.
- F. **CONTRACTOR'S SIGN -** Each Contractor shall post and keep posted, on the outside of its field office, office or exterior fence or wall at site of work, a legible sign giving full name of the company, address of the company and telephone number(s) of responsible representative(s) of the firm who can be reached in event of an emergency at any time.
- G. **ADVERTISING PRIVILEGES -** The City reserves the right to all advertising privileges. The Contractor shall not cause any signs of any kind to be displayed at the site unless specifically required herein or authorized by the Commissioner.

3.8 DDC FIELD OFFICE:

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB SECTION 3.8/A

A. OFFICE SPACE IN EXISTING BUILDING:

1. The Resident Engineer will arrange for office space for sole use in the building where work is in progress. The GC Contractor shall provide and install a lockset for the door to secure the equipment in the room. The GC Contractor shall provide two (2) keys to the Resident Engineer. After completion of the project the GC Contractor shall replace the original lockset on the door and ensure its proper operation.



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2. In addition to equipment specified in Sub-Section 3.8 (D) the GC Contractor shall provide, for exclusive use of the DDC Field Office, the following:
 - a. Two (2) single pedestal desks, 42" x 32"; two (2) swivel chairs with arms and three (3) side chairs without arms to match desk. Two metal (2) lockers, single units, 15" x 18" x 78" overall including 6" legs. Lockers to have flat key locks with two (2) keys each, General Steel products or approved equal. Two (2) full ball bearing suspension four (4) drawer vertical legal filing cabinets with locks, approximately 52"H x 28 1/2"D x 18"W.
 - b. One (1) 9000 B.T.U air conditioner or as directed by Commissioner. Wiring for the air conditioner shall be minimum No. 12 AWG fed from individual circuits in the fuse box.
 - c. One (1) folding conference table, 96" x 30" and ten (10) folding chairs.
 - d. Two (2) metal wastebaskets.
 - e. One (1) fire extinguisher, one (1) quart vaporizing liquid type, brass, wall mounted by Pyrene No. C21 or approved equal.
 - f. One (1) Crystal Springs water cooler with bottled water, Model No. LP14058 or approved equal to be furnished for the duration of the project as required.
3. The GC Contractor shall provide one (1) telephone, where directed and shall pay all costs for telephone service for calls within the New York City limits for the duration of the project.
4. All furniture and equipment, except computer equipment specified in Sub-Section 3.8 D.3, shall remain the property of the GC Contractor..

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.8 B

B. DDC FIELD OFFICE TRAILER:

1. **GENERAL:** The GC Contractor shall, for the time frame specified herein, provide and maintain at it's own cost and expense a DDC Construction Field Office and all related items as specified herein [hereinafter collectively referred to as the "DDC Field Office"] for the exclusive use of the Resident Engineer. The DDC Field Office shall be located at the Project site and shall be solely dedicated to the Project. Provision of the DDC Field Office shall commence within THIRTY (30) days from Notice to Proceed and shall continue through forty-five (45) days after Substantial Completion of the required construction at the Project site. The Contractor shall remove the DDC Field Office forty-five (45) days after Substantial Completion of the required construction, or as otherwise directed in writing by the Commissioner.
2. **TRAILER:** The GC Contractor shall provide at its own cost and expense a mobile office trailer for use as the DDC Field Office. The Plumbing and Electrical Contractors shall install and connect all utility services to the trailer within thirty (30) days from Notice to Proceed. The trailer shall have equipment with the minimum requirements hereinafter specified. Any permit and fees required for the installation and use of said trailer shall be borne by the GC Contractor. The trailer including furniture and equipment therein, except computer equipment specified in Sub-Section 3.8D.3 herein, shall remain the property of the GC Contractor.
3. Trailer shall be an office type trailer of the size specified herein, with exterior stairs at entrance. Trailer construction shall be minimum 2 x 4 wall construction fully insulated with paneled interior walls, pre-finished gypsum board ceilings and vinyl tile floors.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.8.B.3a or SUB-SECTION 3.8.B.3b.



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- a. DDC Managed Project Trailer: DDC Field Office Trailer Size, Layout and Computer Workstation:
- 1) Overall length: 32 Feet
Overall width: 10 Feet
 - 2) Interior Layout:
Provide one (1) general office/conference room area and one (1) private office at one end of the trailer. Provide equipment and amenities as specified in Sub-Section 3.8.B herein.
 - 3) Computer Workstation: Provide one (1) complete computer workstation, as specified in Sub-Section 3.8.D herein, in the private office area as directed by the Resident Engineer.
- b. CM Managed Project Trailer: DDC Field Office Trailer Size, Layout and Computer Workstation:
- 1) Overall length: 50 Feet
Overall width: 10 Feet
 - 2) Interior Layout:
Provide one (1) large general office/conference room in the center of the trailer and two (2) private offices, one (1) each at either end of the trailer. Provide equipment and amenities as specified in Sub-Section 3.8.B herein.
 - 3) Computer Workstation:
Provide three (3) complete computer workstations as specified in Sub-Section 3.8D herein. Provide one (1) each complete computer workstation in each private office and one (1) complete computer workstation at the secretarial position as directed by the Resident Engineer.
4. The exterior of the trailer shall be lettered with black block lettering of the following heights with white borders:
- | | |
|---------------------------------------|--------|
| CITY OF NEW YORK | 2-1/2" |
| DEPARTMENT OF DESIGN AND CONSTRUCTION | 3-3/4" |
| DIVISION OF PUBLIC BUILDINGS | 3-1/2" |
| DDC FIELD OFFICE | 2-1/2" |
- NOTE: In lieu of painting letters on trailer the GC Contractor may substitute a sign constructed of a good quality weatherproof material with the same type and size of lettering above.
5. All windows and doors shall have aluminum insect screens. Provide wire mesh protective guards at all windows.
 6. The interior shall be divided by partitions into general and private office areas as specified herein. Provide a washroom located adjacent to the private office and a built-in wardrobe closet opposite the washroom. Provide a built-in desk in the private office(s) with fixed overhead shelf and clearance below for two (2) file cabinets.
 7. Provide a built-in drafting or reference table, located in the general office/conference room, at least 60 inches long by 36 inches wide with cabinet below and wall type plan rack at least 42 inches wide.
 8. The washroom shall be equipped with a flush toilet, wash basin with two (2) faucets, medicine cabinet, complete with supplies and a toilet roll tissue holder. Plumbing and fixtures shall be approved house type, with each appliance trapped and vented and a single discharge connection. Five (5) gallon capacity automatic electric heater for domestic hot water shall be furnished.
 9. HVAC: The trailer shall be equipped with central heating and cooling adequate to maintain a temperature of 72 degrees during the heating season and 75 degrees during the cooling season when the outside temperature is 5 degrees F. winter and 89 degrees F. summer.



10. Lighting shall be provided via ceiling mounted fluorescent lighting fixtures to a minimum level of 50 foot candles in the open and private office(s) along with sufficient lighting in the washroom. Broken and burned out lamps shall be replaced by the Electrical Contractor. A minimum of four (4) duplex convenience outlets shall be provided in the open office and two (2) each in the private office(s). These outlets shall be in addition to special outlet requirements for computer stations, copiers, HVAC unit, etc.
11. Electrical service switch and panel shall be adequately sized for the entire trailer load. Provide dedicated circuits for HVAC units, hot water heater, copiers and other equipment as required. All wiring and installation shall conform to the New York City Electrical Code.
12. The following movable equipment shall be furnished:
 - a. Two (2) single pedestal desks, 42" x 32"; two (2) swivel chairs with arms and three (3) side chairs without arms to match desk. Two (2) full ball bearing suspension four (4) drawer vertical legal filing cabinets with locks and two (2) full ball bearing two (2) drawer vertical legal filing cabinets in each private office located below built-in desk.
 - b. One (1) folding conference table, 96" x 30" and ten (10) folding chairs.
 - c. Three (3) metal wastebaskets.
 - d. One (1) fire extinguisher one (1) quart vaporizing liquid type, brass, wall mounted by Pyrene No. C21 or approved equal.
 - e. One (1) Crystal Springs water cooler with bottled water, Model No. LP14058 or approved equal to be furnished for the duration of the Contract as required.
13. **TRAILER TEMPORARY SERVICE:** Plumbing and electrical work required for the trailer will be furnished and maintained as below.
 - a. **PLUMBING WORK:** The Plumbing Contractor shall provide temporary water and drainage service connections to the DDC Field Office trailer for a complete installation. Provide all necessary soil, waste, vent and drainage piping.

The Plumbing Contractor shall frost-proof all water pipes to prevent freezing.

 - 1) **REPAIRS, MAINTENANCE:** The Plumbing Contractor shall provide repairs for the duration of the project until the trailer is removed from the site.
 - 2) **DISPOSITION OF PLUMBING WORK:** At the expiration of the time limit set forth in Sub-Section 3.8.B.1 herein, the temporary water and drainage connections and piping to the DDC Field Office trailer shall be removed by the Plumbing Contractor and shall be plugged at the mains. All piping shall become the property of the Plumbing Contractor and shall be removed from the site, all as directed. All repair work due to these removals shall be the responsibility of the GC Contractor.
 - b. **ELECTRICAL WORK:**
 - 1) The Electrical Contractor shall furnish, install and maintain a temporary electric feeder to the DDC Field Office trailer immediately after it is placed at the job site.
 - 2) The temporary electrical feeder and service switch/fuse shall be adequately sized based on the trailer load and installed per the New York City Electrical Code and complying with utility requirements.
 - 3) The Electrical Contractor shall make all arrangements and pay all costs to provide electric service.
 - 4) The Electrical Contractor shall pay all costs for current consumed and for maintenance of the system in operating condition, including the furnishing of the necessary bulb replacements lamps, etc., for the duration of the project and for a period of forty-five (45) days after the date of Substantial Completion.
 - 5) **Disposition of Electric Work:** At the expiration of the time limit set forth in Sub-Section 3.8.B.1 herein, the temporary feeder, safety switch, etc., shall be removed and disposed of as directed.



- 6) All repair work due to these removals shall be the responsibility of the GC Contractor.

c. MAINTENANCE

- 1) The GC Contractor shall provide and pay all costs for regular weekly janitor service and furnish toilet paper, sanitary seat covers, cloth towels and soap and maintain the DDC Field Office in first-class condition, including all repairs, until the trailer is removed from the site.
- 2) Supplies: The GC Contractor shall be responsible for providing (a) all office supplies, including without limitation, pens, pencils, stationery, filtered drinking water and sanitary supplies, and (b) all supplies in connection with required computers and printers, including without limitation, an adequate supply of blank CD's/DVD's, storage boxes for blank CDs/DVDs, and paper and toner cartridges for the printer.
- 3) Risk of Loss: The entire risk of loss with respect to the DDC Field Office and equipment shall remain solely and completely with the GC Contractor. The Contractor shall be responsible for the cost of any insurance coverage determined by the Contractor to be necessary for the Field Office.
- 4) At forty-five (45) days after the date of Substantial Completion, or sooner as directed by the Commissioner, the Plumbing and Electrical Contractors shall have all services disconnected and capped to the satisfaction of the Commissioner. All repair work due to these removals shall be the responsibility of the GC Contractor.

d. TELEPHONE SERVICE: The GC Contractor shall provide and pay all costs for the following telephone services for the DDC Field Office trailer:

- 1) Separate telephone lines for one (1) desk phone in each private office.
- 2) One (1) wall phone (with six (6) foot extension cord) at plan table.
- 3) Separate telephone lines for the fax machine and internet access in each private office. Telephone service shall include voice mail.
- 4) A remote bell located on outside of trailer
- 5) The telephone service shall continue until the trailer is removed from the site.

e. PERMITS: The GC Contractor shall make the necessary arrangements and obtain all permits and pay all fees required for this work.

C. RENTED SPACE: The GC Contractor has the option of providing, at its cost and expense, rented office or store space in lieu of trailer. Said space shall be in the immediate area of the Project and have adequate plumbing, heating and electrical facilities. Space chosen by the GC Contractor must be approved by the Commissioner before the area is rented. All insurance, maintenance and equipment, including computer workstations specified in Sub-Section 3.8 herein, required for the DDC Field Office trailer shall also apply to rented spaces.



REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.8.D

D. ADDITIONAL EQUIPMENT FOR THE DDC FIELD OFFICE:

1. The GC Contractor shall provide a high volume copy machine (50 copies per minute) for paper sizes 8½ x 11, 8½ x 14 & 11 x 17. Copier shall remain at job site until the DDC Field office trailer is removed from the site.
2. The GC Contractor shall furnish a fax machine and a telephone answering machine at commencement of the project for the exclusive use of the DDC Field Office. All materials shall be new, sealed in manufacturer's original packaging and shall have manufacturers' warranties. All items shall remain the property of the City of New York at the completion of the project.
3. **COMPUTER WORKSTATION:** The GC Contractor shall provide one complete computer workstation, in quantities specified in Sub-Section 3.8.B.3, as specified herein:
 - a. **Hardware/Software Specification:**
 - 1) **Computer Equipment** - Computers shall be provided for all contracts that have a Total Consecutive Calendar Days for construction duration as set forth in Schedule "A" of 180 CCD's or greater. Contracts of lesser duration shall not require computers.
 - 2) Computers furnished by the GC Contractor for use by City Personnel, for the duration of the contract, shall be in accordance with Specific Requirements, contained herein, shall remain the property of the City of New York at the completion of the project and shall meet the following minimum requirements:
 - 3) **Personal Computer(s) – Each Workstation Configuration.**
 - a) **Make and Model:** Dell; HP; Gateway; Acer; or, an approved equivalent. (Note: an approved equivalent requires written approval of the DDC Assistant Commissioner of ITS.)
 - b) **Processor:** i5-2400 (6MB Cache, 3.1GHz) or faster computer - Single Processor.
 - c) **System RAM:** Minimum of 4GB (Gigabytes) Dual Channel DDR3 SDRAM at 1333MHz – 2 DIMMSs
 - d) **Hard Disk Drive(s):** 500 GB (Gigabytes) Serial ATA (7200RPM) w/DataBurst Cache, or larger.
 - e) **CD-RW:** Internal CD-RW, 48x Speed or faster.
 - f) **16xDVD+/-RW DVD** DVD Burner (with double layer write capability) 16x Speed or faster
 - g) **I/O Ports:** Must have at least one (1) Serial Port, one (1) Parallel Port, and three (3) USB Ports.
 - h) **Video Display Card:** HD Graphics (VGA, HDMI) with a minimum of 64 MB of RAM.
 - i) **Monitor:** 22" W, 23.0 Inch VIS, Widescreen, VGA/DVI LCD Monitor.



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- j) Available Exp. Slots: System as configured above shall have at least two (2) full size PCI Slots available.
 - k) Network Interface: Integrated 10/100/1000 Ethernet Card
 - l) Other Peripherals: Optical scroll Mouse, 101 Key Keyboard, Mouse Pad and all necessary cables.
 - m) Software Requirement: Microsoft Windows 7 Professional SP1, 32 bit; Microsoft Office Professional 2010 or 2013; Microsoft Project 2010; Adobe Acrobat reader, Anti-Virus software package w/ 2 year updates subscription, and, either Auto Cad LT or Microsoft Visio Standard Edition, as directed by the Resident Engineer.
- 4) DDC Field Office Specs: DDC Field Offices requiring computers shall be provided with the following:
- a) One 1) broad-band internet service account. Wideband Internet connectivity at a minimum throughput of 15 Mbps download and 5 Mbps upload is required at each field office location with 1-5 staffers. For larger field offices see table below for minimum required upload speeds. Telephone service should be bundled together with Internet connectivity. Because of throughput requirements Verizon FIOS is the preferred connectivity provider where available.

Office Personnel #	Upload Speeds (Minimum)
1 – 5	5 Mbps
6 – 10	10 Mbps
11 – 15	15 Mbps
16 – 20 ...	20 Mbps

This account will be active for the life of the project. The e-mail name for the account shall be the DDC Field Office/project Id (e.g. FLD_K_HWK666 McGuinness@earthlink.com).

- b) One (1) 600 DPI HP Laser Jet Printer (twelve (12) pages per minute or faster) with one (1) Extra Paper (Legal Size)
 - c) All necessary cabling for equipment specified herein.
 - d) Storage Boxes for Blank CD's
 - e) Printer Table
 - f) UPS/ Surge Suppressor combo
- 5) All computers required for use in the DDC Field Office shall be delivered, installed, and setup in the DDC Field Office by the GC Contractor.
- 6) All Computer Hardware shall come with a three (3) year warranty for on-site repair or replacement. Additionally, and notwithstanding any terms of the warranty to the contrary, the GC Contractor is responsible for rectifying all computer problems or equipment failures within one (1) business day.



- 7) An adequate supply of blank CDs/DVDs, and paper and toner cartridges for the printer shall be provided by the GC Contractor, and shall be replenished by the GC Contractor as required by the Resident Engineer.
- 8) It is the GC Contractor's responsibility to ensure that electrical service and phone connections are also available at all times; that is, the Field Office Computer(s) is to be powered and turned on twenty-four (24) hours each day.
- 9) Broadband connectivity is preferred at each field office location. Please take into consideration that an extra phone line dedicated to the modem must be ordered as part of the contract unless Internet broadband connectivity, via Cable or DSL, is available at the planned field office location. Any questions regarding this policy should be directed to the Assistant Commissioner of Information Technology Services at 718-391-1761.
- 10) Ownership: The equipment specified above shall, unless otherwise directed by the Commissioner, be the sole property of the City of New York upon delivery to the DDC Field Office. The GC Contractor shall prepare and maintain an accurate inventory of all equipment which it purchases for the DDC Field Office. Such inventory shall be provided to the City of New York. Upon completion of the required services, as directed by the Commissioner, the Contractor shall turn such equipment over to the City of New York.

E. HEAD PROTECTION (HARD HATS):

1. The GC Contractor shall provide a minimum of 10 standard protective helmets for the exclusive use of Department of Design and Construction personnel and their visitors. Helmets shall be turned over to the Resident Engineer and kept in the DDC Field Office.
2. Upon completion of the project, the helmets shall become the property of the GC Contractor.

3.9 MATERIAL SHEDS:

- A. Material sheds used by each Contractor for the storage of its materials shall be kept at locations which will not interfere at any time with the progress of any part of the work or with visibility of traffic control devices.
- B. Store combustible materials apart from the facility.

3.10 TEMPORARY ENCLOSURES:

- A. The GC Contractor shall provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weather tight enclosure for building exterior.
- B. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.

3.11 TEMPORARY PARTITIONS:

- A. The GC Contractor shall provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate occupied tenant areas from fumes and noise.
 1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant plywood on construction operations side.
 2. Construct dustproof partitions with 2 layers of 3-mil (0.07-mm) polyethylene sheet on each side. Cover floor with 2 layers of 3-mil (0.07-mm) polyethylene sheet, extending sheets 18 inches (460 mm) up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant plywood.



- a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches (1219 mm) between doors. Maintain water-dampened foot mats in vestibule.
3. Insulate partitions to provide noise protection to occupied areas.
4. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.
5. Protect air-handling equipment.
6. Weather strip openings.
7. Provide walk-off mats at each entrance through temporary partition.

3.12 TEMPORARY FIRE PROTECTION:

- A. The GC Contractor shall install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
- B. Prohibit smoking in all areas.
- C. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
- D. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
- E. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.13

3.13 WORK FENCE ENCLOSURE:

- A. The GC Contractor shall furnish, erect and maintain a wood construction or chain-link fence to the extent shown on the drawings or required by the work enclosing the entire project on all sides. All materials used shall be new. Any permit required for the installation and use of said fence and costs shall be borne by the GC Contractor.
- B. WOOD FENCE shall be 7'-0" high with framing construction of yellow pine, using 4" x 4" approved preservative-treated posts on not more than 6'-0" centers, with three (3) rails of at least 2" x 4" size to which shall be secured minimum 1/2 inch thick exterior grade plywood. Posts shall be firmly fixed in the ground at least 30" and thoroughly braced. Top edge of fence shall be trimmed with a rabbeted edge mould. Provide on the street traffic sides of fence, observation openings as directed.
 1. GATES - Provide an adequate number of double gates, complete with hardware, located as approved by the Resident Engineer. Double gates shall have a total clear opening of 14'-0" with two (2) 7'-0" hinged swinging sections. Hanging posts shall be 6" x 6" and shall extend high enough to receive and be provided with tension or sag rods for the swinging sections.
 2. PAINTING - The fence and gates shall be entirely painted on the street and public sides with one (1) coat of exterior primer and one (1) top coat of exterior grade acrylic-latex emulsion paint. Black stenciled signs reading "POST NO BILLS" shall be painted on fence with three (3) inch high letters on 25 foot spacing for the entire length of fence on street traffic sides. Signs shall be stenciled five (5) feet above the sidewalk.



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- C. CHAIN-LINK FENCING shall be minimum 2-inch thick, galvanized steel, chain-link fabric fencing; 8 feet high with galvanized steel pipe posts; minimum 2-3/8-inch OD line posts and 2-7/8-inch OD corner and pull posts, with 1-5/8-inch OD top and bottom rails. Fence shall be accurately aligned and plumb, adequately braced and complete with gates, locks and hardware as required. Under no condition shall fencing be attached or anchored to existing construction or trees.
- D. 1. It shall be the obligation of the GC Contractor to remove all posters, advertising signs, and markings, etc., immediately.
2. Should the fencing be required to be relocated during the course of the Contract, it shall be done by the GC Contractor at no additional cost to the City.
3. Where sidewalks are used for "drive over" purposes for Contractor vehicles, a suitable wood mat or pad shall be provided for protection of sidewalks and curbs.
4. Where required, make provision for fire hydrants, lampposts, etc.
5. REMOVAL - When directed by the Resident Engineer, the fence shall be removed.

3.14 RODENT AND INSECT CONTROL:

- A. DESCRIPTION: The GC Contractor shall provide all labor, materials, plant and equipment, and incidentals required to survey and monitor rodent activity and to control any infestation or outbreak of rodents, rats, mice, water beetles, roaches and fleas within the project area. Special attention should be paid to the following conditions or areas:
- 1 Wet areas within the project area, including all temporary structures.
 - 2 All exterior and interior toilet structures within the project area.
 - 3 All Field Offices and shanties within the project area of all Contractors and DDC.
 - 4 Wherever there is evidence of food waste and/or discarded food or drink containers, in quantity, that would cause breeding of rodents or the insects herein specified.
 - 5 Any other portion of the premises requiring such special attention.
- B. MATERIALS:
1. All materials shall be approved by the New York State Department of Environmental Conservation and comply with the New York City Health Code, OSHA and the laws, ordinances and regulations of State and Federal agencies pertaining to such chemical and/or materials.
- C. PERSONNEL:
1. All pest control personnel must be supervised by an exterminator licensed in categories 7A and 8.
- D. METHODS:
1. Application and dosage of all materials shall be done in strict compliance with the manufacturer's recommendations.
 2. Any unsanitary conditions, such as uncollected garbage or debris, resulting from all Contractors' activities, which will provide food and shelter to the resident rodent population shall be corrected by the GC Contractor immediately after notification of such condition by the Resident Engineer.
- E. RODENT CONTROL WORK:
- 1 In wetlands, woodlands and areas adjacent to a stream, special precautions must be taken to protect water quality and to ensure the safety of other wildlife. To prevent poisoned bait from entering streams, no poisoned bait shall be used in areas within seventy-five (75) feet of all stream banks. Live traps must be used in these seventy-five (75) foot buffer zone areas and within wetland and woodland areas.



- 2 In areas outside the seventy-five (75) foot zone of protection adjacent to streams, and in areas outside wetlands and woodlands, tamper proof bait stations with poisoned bait shall be placed during the period of construction and any consumed or decomposed bait shall be replenished as directed.
- 3 At least one month prior to initiation of the construction work, and periodically thereafter, live traps and/or rodenticide bait in tamper proof bait stations, as directed above, shall be placed at locations that are inaccessible to pets, human beings, children and other non-target species, particularly wildlife (for example-birds) in the project area.
- 4 The GC Contractor shall be responsible for collecting and disposing of all trapped and poisoned rodents found in live traps and tamper proof bait stations. The GC Contractor shall also be responsible for posting and maintaining signs announcing the baiting of each particular location.
The GC Contractor shall be responsible for the immediate collection and disposal of any visible rodent remains found on streets or sidewalks within the project area.
- 5 It is anticipated that public complaints will be addressed to the Commissioner. The GC Contractor, where directed by the Commissioner, shall take appropriate actions, like baiting, trapping, proofing, etc., to remedy the source of complaint within the next six (6) hours of normal working time which is defined herein for the purposes of this section as 7 A.M. to 6 P.M. on Mondays through Saturdays.
- 6 Emergency service during the regular workday hours (Monday through Friday) shall be rendered within 24 hours, if requested by the Commissioner, at no additional cost to the City.

F. EDUCATION & INSTRUCTION:

- 1 The GC Contractor shall post notices on all Construction Bulletin Boards advising workers, employees, and residents to call the Engineer's Field Office to report any infestation or outbreak of rodents, rats, mice, water beetles, roaches and fleas within the project area. The GC Contractor shall provide and distribute literature pertaining to IPM techniques of rodent control to affected businesses and superintendents of nearby residential buildings to ensure their participation in maintaining their establishments free of unsanitary conditions, harborage removal and rodent proofing.
- 2 Prior to application of any chemicals, the GC Contractor shall furnish to the Commissioner copies or sample labels for each pesticide, antidote information, and Material Data Safety Sheets (MSDS) for each chemical used.

G. RECORDS:

1. The GC Contractor shall keep a record of all rodent and waterbug infestation surveys conducted by him/her and make available, upon request, to the Commissioner. The findings of each survey shall include, but not be limited to, recommended Integrated Pest Management (IPM) techniques, like baiting, trapping, proofing, etc., proposed for rodent and waterbug pest control.
2. The GC Contractor shall maintain records of all locations baited along with the type and quantity of rodenticide and insecticide bait used.

3.15 PLANT PEST CONTROL REQUIREMENTS and TREE PROTECTION REQUIREMENTS:

- A. Plant Pest Control Requirements:** The GC Contractor and its subcontractors, including the Certified Arborist described below, shall comply with all Federal and New York State laws and regulations concerning Asian Longhorned Beetle (ALB) management, including protocols for ALB eradication and containment promulgated by the New York State Department of Agriculture and Markets (NYSDAM). The GC Contractor is referred to: (1) Part 139 of Title 1 NYCRR, Agriculture



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and Markets Law, Sections 18, 164 and 167, as amended, and (2) State Administrative Procedure Act, Section 202, as amended.

1. All tree work performed within the quarantine areas must be performed by New York State Department of Agriculture and Markets (NYSDAM) certified entities. Transportation of all host material, living, dead, cut or fallen, inclusive of nursery stock, logs, green lumber, stumps, roots, branches and debris of a half inch or more in diameter from the quarantine areas is prohibited unless the GC Contractor or its subcontractor performing tree work has entered into a compliance agreement with NYSDAM. The terms of said compliance agreement shall be strictly complied with. Any host material so removed shall be delivered to a facility approved by NYSDAM. For the purpose of this contract host material shall be ALL species of trees.
 2. Any host material that is infested with the Asian Longhorned Beetle must be immediately reported to NYSDAM for inspection and subsequent removal by either State or City contracts, at no cost to the GC Contractor.
 3. Prior to commencement of tree work, the GC Contractor shall submit to the Commissioner a copy of a valid Asian Longhorned Beetle compliance agreement entered into with NYSDAM and the GC Contractor or its subcontractor performing tree work. If any host material is transported from the quarantine area the GC Contractor shall immediately provide the Commissioner with a copy of the New York State 'Statement of Origin and Disposition' and a copy of the receipt issued by the NYSDAM approved facility to which the host materials are transported.
 4. Quarantine areas, for the purpose of this contract shall be defined as all five boroughs of the City of New York. In addition, prior to the start of any tree work, the GC Contractor shall contact the NYC Department of Parks & Recreation's Director of Landscape Management at (718) 699-6724, to determine the limits of any additional quarantine areas that may be in effect at the time when tree work is to be performed. The quarantine area may be expanded by Federal and State authorities at any time and the GC Contractor is required to abide by any revisions to the quarantine legislation while working on this contract. For further information please contact: NYSDAM (631) 288-1751.
- B. Tree Protection Requirements: The GC Contractor shall retain a Certified Arborist, as defined by New York City Department of Parks and Recreation (NYCDPR) regulations, to provide the services described below.
1. Surveys and Reports: The Certified Arborist shall, at the times indicated below, conduct a survey and prepare a plant material assessment report which includes: (1) identification, by species and pertinent measurements, of all plant material located on the project site, or in proximity to the project site, as described below, including all trees, significant shrubs and/or planting masses; (2) identification and plan for the containment of plant pests and pathogens, including the ALB, as described in paragraph A above; (3) evaluation of the general health and condition of any infected plant material.
 2. Frequency of Reports: The Certified Arborist shall conduct a survey and provide a plant material assessment report at two (2) points in time: (1) prior to the commencement of construction work; and (2) at the time of substantial completion. In addition, for projects exceeding 24 months in duration, the Certified Arborist shall conduct a survey and prepare a report at the midpoint of construction. Copies of each plant material assessment report shall be submitted to the Resident Engineer within two (2) weeks of the survey.



3. Proximity to Project Site: Off-site trees, significant shrubs and/or planting masses shall be considered to be located in proximity to the project site under the circumstances described below.
 - a. The tree trunk, significant shrub, or primary cluster of stems in a planting mass is within 50 (fifty) feet of the project's Contract Limit Lines (CLLs) or Property Lines (PLs).
 - b. Any part of the tree or shrub stands within 50 (fifty) feet of: (a) a path for site access for vehicles and/or construction equipment; or (b) scaffolding to be erected for construction activity, including façade remediation projects.
 - c. The Certified Arborist determines that the critical root zone (CRZ) of an off-site tree, significant shrub, or primary cluster of stems in a planting mass extends into the project site, whether or not that plant material is located within the 50-foot inclusionary perimeter as outlined above.
 4. Tree Protection Plan: The Certified Arborist shall prepare, and the GC Contractor shall implement, a Tree Protection Plan, for all trees that may be affected by any construction work, excavation or demolition activities, including without limitation, (1) on-site trees, (2) street trees, as defined below, (3) trees under NYCDPR jurisdiction as determined by the Department of Transportation, and (4) all trees that are located in proximity to the project site, as defined above. The Tree Protection Plan shall comply with the NYC DPR rules, regulations and specifications. The GC Contractor is referred to Chapter 5 of Title 56 of the Official Compilation of the Rules of the City of New York. Copies of the Tree Protection Plan shall be submitted to the Resident Engineer prior to the commencement of construction. Implementation of the Tree Protection Plan for street trees and trees under NYCDPR jurisdiction shall be in addition to any tree protection requirements specified or required for the project site. For the purpose of this Sub-Section, a "street tree" means the following: (1) a tree that stands in a sidewalk, whether paved or unpaved, between the curb lines or lateral lines of a roadway and the adjacent property lines of the project site, or (2) a tree that stands in a sidewalk and is located within 50 feet of the intersection of the project's site's property line with the street frontage property line.
- C. No Separate Payment. No separate payment shall be made for compliance with Plant Pest Control Requirements or Tree Protection Requirements. The cost of compliance with Plant Pest Control Requirements and Tree Protection Requirements shall be deemed included in the GC Contractor's bid for the Project.

3.16 PROJECT IDENTIFICATION SIGNAGE:

- A. The GC Contractor shall provide, install and maintain Project identification and other signs where indicated to inform public and individuals seeking entrance to the Project.



- B. In order to properly convey notice to persons entering upon a City construction site, the GC Contractor shall furnish and install a sign at the entrance (gates) as follows:

NO TRESPASSING

AUTHORIZED PERSONNEL ONLY

- C. If no construction fence exists at the site, this notice shall be conveyed by incorporating the above language into safety materials (barriers, tape, and signs).
D. Provide temporary, directional signs for construction personnel and visitors.
E. Maintain and touch up signs so that they are legible at all times.

3.17 PROJECT CONSTRUCTION SIGN AND RENDERING:

A. PROJECT SIGN:

- 1 Responsibility: The GC Contractor shall produce and install one (1) project sign which shall be posted and maintained upon the site of the project at a place and in a position directed by the Commissioner. The GC Contractor shall protect the sign from damage during the continuance of work under the Contract and shall do all patching of lettering, painting and bracing thereof necessary to maintain the sign in first class condition and in proper position. Prior to fabrication, the GC Contractor shall submit an 8-1/2" x 11" color match print proof from the sign manufacturer of the completed sign for approval by the Commissioner.
- 2 Sign Quality: The GC Contractor shall provide all materials required for the production of the sign as specified herein. Workmanship shall be of the best quality, free from defects and shall be produced in a timely manner.
- 3 Schedule: Upon project mobilization, the GC Contractor shall commence production and installation of the sign.
- 4 Removal: At the completion of all work under the Contract, the GC Contractor shall remove and dispose of the project sign away from the site.
- 5 Sign construction:
 - a. Frame: The frame shall be from quality dressed 2"x2" pine, fire retardant, pressure treated lumber, that surrounds the inside back edge of the sign. The sign shall have one (1) intermediate vertical and two (2) diagonal supports, glued and screwed for rigidity. Frame shall be painted white with two (2) coats of exterior enamel paint, prior to mounting of sign panel.
 - b. Edging: U-shaped, 22 gauge aluminum edging, with a white enameled finish to match sign background, shall run around entire edging of sign panel and frame. Corners shall be mitered for a tight fit. Channel dimensions shall be 1" inch (overlap to sign panel face) x 1 3/4" (or as required across frame depth) x 1" (back overlap).
 - c. Sign Panel: 4' x 8' panel shall be constructed in one (1) piece of 14 gauge (.0785") 6061-T6 aluminum. This panel shall be pre-finished both sides with a glossy white baked-on enamel finish and be flush with edge of 2" x 2" wood frame. Samples must be submitted for approval.
 - d. Fastening: Fasten sign panel to wood frame using cadmium plated no. 8 sheet metal screws at 1/2" below edge of panel and 8" on center. The U-shaped aluminum channel



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shall be applied over the wood frame edge and fastened with cadmium plated no. 8 sheet metal screws at 12" on center around the entire perimeter.

6 Sign Graphics:

- a. A digital file of the project sign will be provided to the GC Contractor by the Commissioner's representative for printing. The Commissioner's representative shall insert the project name and names and titles of personnel (3 or more) and any other required information associated with the project. All signs may include a second panel for a project rendering as described in Sub-Section 3.17.B herein.
- b. The digital file shall be reproduced at the Sign Panel size of 4' x 8' on 3M High Performance Vinyl or approved equal. The 3M High Performance Vinyl or equivalent shall be guaranteed for nine (9) years. Guarantee must cover fading, peeling, chipping or cracking. The sign manufacturer is required to maintain all specified Pantone Matching System (PMS) type and other composition elements represented in the digital file of the project sign.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.17.B

B. PROJECT RENDERING:

1. Responsibility: In addition to the Project Sign, the GC Contractor shall furnish and install one (1) sign showing a rendering of the project. A digital file of the project rendering will be provided to the GC Contractor by the Commissioner's representative. From an approved image file provided by DDC, the Project Rendering is to be sized, printed, and mounted in an identical manner as described in Sub-Section 3.17 A above for the Project Sign. A color match print proof from the sign manufacturer of the Rendering Sign printed from the supplied file is to be submitted to DDC for approval before fabrication. The Rendering Sign is to be posted at the same height as the Project Sign. Where possible, the Rendering Sign shall be mounted with a perfect match of the short sides of the rectangle so that the Rendering Sign and the Project Sign together will create one long rectangle.
2. Removal: At the completion of all work under the Contract, the GC Contractor shall remove and dispose of the project rendering away from the site.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.18

3.18 SECURITY GUARDS/FIRE GUARDS ON SITE:

A. SECURITY GUARDS (WATCHMEN):

1. The GC Contractor shall provide competent Security Guards on the site until final acceptance of the project or earlier if so notified in writing by the Commissioner. The Security Service shall commence with the start of work. There shall be no less than one (1) Security Guard on duty every day, including Saturdays, Sunday and Holidays, 24 hours a day, except between the hours of 8:00 A.M. and 4:00 P.M. on any day which is a regular working day for a majority of the trades. This exception during the working day shall not apply after the finishing painting of the plaster work is commenced; thereafter, not less than one (1) Security Guard shall be on duty continuously, 24 hours a day, until final completion of the project or earlier if so notified in writing by the Commissioner.



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2. Every Security Guard shall be required to hold a "Certificate of Fitness" issued by the Fire Department. Every Security Guard shall, during his/her tour of duty, perform the duties of Fire Guard in addition to his/her security obligations.
 3. Should the Commissioner find that any Security Guard is unsatisfactory, such guard shall be replaced by the GC Contractor upon the written demand of the Commissioner.
 4. Each Security Guard furnished by the GC Contractor shall be instructed by the GC Contractor to include in their duties the entire construction site including the Field Office, temporary structures, and equipment, materials, etc.
 5. Should any Contractor consider the security requirements outlined above inadequate, that Contractor shall provide such additional security as it thinks necessary, after obtaining the written consent of the Commissioner. The additional cost of such approved increased protection will be paid by the Contractor who provides the additional protection.
 6. Nothing contained in this Sub-Section shall diminish in any way the responsibility of each Contractor for its own work, materials, tools, equipment, nor for any of the other risks and obligations outlined hereinbefore in this Sub-Section.
- B. **COSTS** - The GC Contractor shall employ Security Guards/Fire Guards at all times, except as otherwise modified by the detailed Specifications and as approved by the Commissioner, for the purpose of safeguarding and protecting the site. All costs for Security Guards/Fire Guards shall be borne by the GC Contractor.
- C. **RESPONSIBILITY** - All Contractors will be responsible for safeguarding and protecting their own work, materials, tools and equipment.

3.19 SAFETY:

- A. Each Contractor, in compliance with requirements of Section 01 35 26, **SAFETY REQUIREMENTS PROCEDURES**, shall provide and maintain all necessary temporary closures, guard rails, and barricades to adequately protect all workers and the public from possible injury. Any removal of these items, during the progress of the work, shall be replaced by the GC Contractor at no additional cost to the City.

END OF SECTION 01 50 00



SECTION 01 54 11
TEMPORARY ELEVATORS AND HOISTS

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings; (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This section includes the following:
1. Temporary Use, Operation and Maintenance of Elevators during Construction
 - a. For New buildings up to 15 Stories
 - b. For New buildings over 15 Stories
 - c. For Existing Buildings
 2. Temporary Construction Hoists and Hoist ways (For Material and Personnel)

1.3 RELATED SECTIONS: include without limitation the following:

- A. Section 01 10 00 SUMMARY
B. Section 01 42 00 REFERENCES
C. Section 01 50 00 TEMPORARY FACILITIES, SERVICES AND CONTROLS
D. Section 01 54 23 TEMPORARY SCAFFOLDS AND SWING STAGING
E. Section 01 77 00 CLOSE OUT PROCEDURES

PART II – PRODUCTS (Not Used)

PART III – EXECUTION

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.1

3.1 TEMPORARY USE, OPERATION AND MAINTENANCE OF ELEVATORS DURING CONSTRUCTION FOR NEW BUILDINGS UP TO AND INCLUDING 15 STORIES:

- A. **INSTALLATION:** The GC Contractor shall install, complete, operate, and maintain in good working order, as indicated herein, one (1) selected main elevator for the transport of employees of all Contractors and representatives of the DDC and other Governmental Agencies having jurisdiction of work at the project. The GC Contractor shall furnish, install and maintain such elevator in good working order, including all necessary hoisting ropes, governor cables, traveling conductor cables, operating devices, temporary hand reset target annunciators, temporary signal devices, and all other permanent or temporary parts. The installation, operation and maintenance of the temporary elevator and all equipment and/or parts utilized in connection therewith shall be in accordance with the rules and regulations of all agencies and/or entities having jurisdiction over elevators in temporary use.



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- B. **RESPONSIBILITY:** The GC Contractor shall be responsible for any injury to persons or damage to property arising out of the temporary elevator and all equipment and/or parts utilized in connection therewith.
- C. **COSTS:** The GC Contractor shall be responsible for all costs in connection with the temporary elevator, including without limitation: (1) installing and operating the temporary elevator, (2) maintaining the temporary elevator in clean, proper operating condition, including the cost of lubricants and/or parts for such maintenance, (3) performing all work in pits, shaft ways and machine rooms necessary for the operation of the temporary elevator, (4) replacing the temporary elevator or any equipment or parts utilized in connection therewith, if required, due to damage, destruction or excessive wear or corrosion, except for the replacement of hoisting ropes as set forth below, (5) performing all required electrical work in connection with the temporary elevator, (6) providing all electric power required to operate the temporary elevator, (7) providing all necessary conduit and wiring connections for the proper operation and signaling of the temporary elevator, and (8) providing all labor for the operation and maintenance of the temporary elevator, including on an overtime basis if necessary. The total Contract Price shall include all costs in connection with the temporary elevator, including without limitation, the costs specified herein. The Electrical Contractor shall pay the costs of all electrical current used for operating the temporary elevators.
- D. **ACTIVATION TIME:** The GC Contractor shall keep the temporary elevator activated from a period of time of 15 minutes before the established starting time of that trade which starts work earliest in the morning to 15 minutes after the established quitting time of that trade which stops work latest in the evening. This applies to every day in the week, which is established as a regular working day for the aforementioned trades.
- E. **COMMENCEMENT OF SERVICE:** The GC Contractor shall begin to provide temporary elevator service using the selected main passenger elevator no later than eight (8) weeks (40 working days) after the machine room roof slab, or that portion of it surrounding the elevator shaft, has been placed. No later than three (3) weeks (15 working days) after the machine room roof slab, or that portion of it surrounding the elevator shaft, has been placed the following work shall have been completed:
1. The shaft shall have been completely enclosed by either the permanent or a temporary enclosure meeting the requirements of the law.
 2. The machine room shall have been made completely watertight either by permanent or temporary construction. Beams or other devices, either permanent or temporary shall be provided which will enable the safe and practicable hoisting of the elevator machinery for installation.
 3. There shall have been installed on all floors at the shaft way entrances to the elevator, solid substantial frames and either sliding or swing doors with substantial hardware and door locks and any necessary approved wire mesh barricades for adjacent shaft ways.
 4. There shall have been furnished and installed solid substantial enclosures at front, back, sides and top of car platform enclosure, with emergency exit at top of car, excepting that the portion of the front at the elevator entrance shall have been provided with a substantial temporary door or gate.
- F. **ELECTRICAL INSTALLATION:** The Electrical Contractor, not later than 20 calendar days after the machine room roof slab or that portion of its surrounding the elevator has been placed, shall have furnished and installed temporary or permanent power and light feeders as required for the elevator used for temporary service and shall have connected such feeders to the terminals on the starter panels or controllers in the machine room to the low voltage transformers and car light outlets in the center of shaftway and for the car control and signal traveling cables. The Electrical Contractor shall make all these required connections as soon as the equipment is declared ready for such connections by the Resident Engineer.
- G. **REMOVAL:** When elevators for permanent use have been installed and are in condition for service, and when directed by the Commissioner, the GC Contractor shall remove the temporary enclosures and all



temporary elevator equipment and promptly proceed with the installation of the permanent equipment as required under the Contract.

- H. **INSPECTION:** Before temporary elevator equipment is removed, a joint inspection of the equipment shall be made by the GC Contractor and the Commissioner to determine the condition of this equipment upon the discontinuation of its temporary use. If this inspection deems it necessary, the GC Contractor shall furnish and install new governor and compensating ropes, new traveling cables and new controller parts, etc. The car and counterweight safeties shall be thoroughly cleaned of all dirt and all foreign matter, then properly lubricated and placed in good operating condition to the satisfaction of the Commissioner. If it is determined and ordered by the Commissioner that new hoist ropes are required, such ropes shall be installed and payment therefore will be made in accordance with Article 26 of the Contract.
- I. **REPLACEMENT:** The GC Contractor shall furnish and install new equipment or parts of the temporary elevator installation that have been damaged, destroyed, or that indicate excessive wear or corrosion, excepting the replacement of hoisting ropes. All shaft ways, pits, motor rooms and sheave spaces used for temporary operation of elevators shall be thoroughly cleaned. Where lubricated rails are used they shall be washed down. If roller guides are used, all rust, dirt, etc., must be moved from the rails. The full cost of parts replacement, cleaning, etc., shall be borne by the GC Contractor except for the replacement of hoisting ropes.
- J. **LIMITATIONS OF USE:** The temporary elevator shall not be used during its operation for the hoisting of materials or the removal of rubbish, but shall be limited only to the transportation of employees of all Contractors and the representatives of DDC and other Governmental Agencies having jurisdiction of work at the project. However, the Resident Engineer may grant special permission at specified times to the various Contractors to hoist materials, which in the Resident Engineer's opinion will not overload or damage the elevator installation, but only after such times as all plastering has been completed from the second floor up. The particular Contractor using the elevator for the hoisting of its material shall be responsible for any damage to the elevator during the entire period of such use. The GC Contractor shall give notification in writing to the Resident Engineer of any alleged damage to the elevator installation within 24 hours after the elevator has been employed for the hoisting of materials by the particular Contractor(s). As indicated above the GC Contractor shall be responsible for the replacement of any equipment or parts of the temporary elevator that have been damaged.
- K. **PAYMENT FOR USE:** The GC Contractor shall be paid for its operation and maintenance of the temporary elevator or permanent elevator used for temporary service at the daily rate indicated under the Item of its Contract. All other costs in connection with the elevator installation and equipment, excepting electrical work done by the Electrical Contractor under its Contract, shall be included in the Total Bid price submitted by the GC Contractor.
- L. **LIQUIDATED DAMAGES:** The GC Contractor will be charged at the rate of \$100 per day for each day it fails to provide the temporary elevator service described in this section beginning with the 41st working day after the machine room roof slab, or that portion of it surrounding the elevator shaft, has been placed and stripped. This charge will be deducted from any amount due and owing to the GC Contractor.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.2

3.2 TEMPORARY USE, OPERATION AND MAINTENANCE OF ELEVATORS DURING CONSTRUCTION FOR NEW BUILDING OVER 15 STORIES:

- A. **INSTALLATION:** The GC Contractor shall install, complete, operate, and maintain in good working order, as indicated herein, two (2) selected main elevators for the transport of employees of all Contractors and representatives of the DDC and other Governmental Agencies having jurisdiction over work at the project. The GC Contractor shall furnish, install, and maintain such elevators in good working order, including all necessary hoisting ropes, governor cables, traveling conductor cables, operating devices, temporary hand reset target annunciators, temporary signal devices, and all other permanent or temporary parts.



The installation, operation and maintenance of the temporary elevators and all equipment and/or parts utilized in connection therewith shall be in accordance with the rules and regulations of all agencies and/or entities having jurisdiction over elevators in temporary use. The two (2) elevators shall not be operated simultaneously.

- B. **RESPONSIBILITY:** The GC Contractor shall be responsible for any injury to persons or damage to property arising out of the temporary elevators and all equipment and/or parts utilized in connection therewith.
- C. **COSTS:** The GC Contractor shall be responsible for all costs in connection with the temporary elevator, including without limitation: (1) installing and operating the temporary elevators, (2) maintaining the temporary elevators in clean, proper operating condition, including the cost of lubricants and/or parts for such maintenance, (3) performing all work in pits, shaft ways and machine rooms necessary for the operation of the temporary elevators, (4) replacing the temporary elevators or any equipment or parts utilized in connection therewith, if required, due to damage, destruction or excessive wear or corrosion, except for the replacement of hoisting ropes as set forth below, (5) performing all required electrical work in connection with the temporary elevator, (6) providing all electric power required to operate the temporary elevators, (7) providing all necessary conduit and wiring connections for the proper operation and signaling of the temporary elevator, and (8) providing all labor for the operation and maintenance of the temporary elevators, including on an overtime basis if necessary. The total Contract Price shall include all costs in connection with the temporary elevators, including without limitation, the costs specified herein. The Electrical Contractor shall pay the costs of all electrical current used for operating the temporary elevators.
- D. **ACTIVATION TIME:** The GC Contractor shall keep the temporary elevator activated from a period of time of 15 minutes before the established starting time of that trade which starts work earliest in the morning to 15 minutes after the established quitting time of that trade which stops work latest in the evening. This applies to every day in the week, which is established as a regular working day for the aforementioned trades.
- E. **LOW RISE ELEVATOR:** The GC Contractor shall begin to provide temporary elevator service using one (1) selected main passenger elevator no later than six (6) weeks (30 working days) after the 12th Floor slab, or that portion of it surrounding the elevator shaft, has been placed and stripped. No later than one (1) week, five (5) working days, after the 12th Floor slab, or that portion of it surrounding the elevator shaft, has been placed and stripped the following work shall have been completed:
1. The shaft shall have been completely enclosed up to the 12th Floor by either the permanent or a temporary enclosure meeting the requirements of the law.
 2. A temporary machine room enclosure shall have been provided at the 11th Floor and shall have been made completely watertight either by permanent or temporary construction. Beams or other devices, either permanent or temporary, shall be provided which will enable the safe and practicable hoisting of the elevator machinery for installation.
 3. There shall have been installed on all floors up to and including the 9th Floor at the shaft entrances to the elevator, solid substantial wood frames and either sliding or swing doors with substantial hardware and door locks, also any necessary approved wire mesh barricades for adjacent shaft ways.
 4. There shall have been furnished and installed solid substantial enclosures at front, back, sides and top of car platform enclosure, with an emergency exit at top of car, excepting that the portion of the front at the elevator entrance shall have been provided with a substantial temporary door or gate.
- F. **ELECTRICAL INSTALLATION:** The Electrical Contractor, not later than 10 calendar days after the 12th Floor slab or that portion of it surrounding the elevator, has been poured and stripped, shall have furnished and installed temporary or permanent power and light feeders as required for the elevator used for temporary service and shall have connected such feeders to the terminals on the starter panels or



- controllers in the temporary machine room, to the low voltage transformers and car light outlets in the center of the shaftway and for the car control and signal traveling cables. The Electrical Contractor shall make all these required connections as soon as the Equipment is declared ready for such connections by the Resident Engineer.
- G. **HIGH RISE ELEVATOR:** The GC Contractor shall begin to provide temporary elevator service to all floors, using a selected main passenger elevator, no later than eight (8) weeks (40 working days) after the machine room roof slab, or that portion of it surrounding the elevator shaft, has been placed. No later than three (3) weeks (15 working days) after the machine room roof slab, or that portion of it surrounding the elevator shaft, has been placed, the following work shall have been completed:
1. The shaft shall have been completely enclosed by either the permanent or temporary enclosure, meeting the requirements of the law.
 2. The machine room shall have been made completely watertight either by permanent or temporary construction. Beams or other devices, either permanent or temporary shall be provided which will enable the safe and practicable hoisting of the elevator machinery for installation.
 3. There shall have been installed on all floors at the shaftway entrances to the elevator, solid substantial frames and either sliding or swing doors with substantial hardware and door locks, also any necessary approved wire mesh barricades for adjacent shaftways.
 4. There shall have been furnished and installed, solid substantial enclosures at front, back, sides and top of car platform enclosure, with an emergency exit at top of car, excepting that the portion of the front at the elevator entrance shall have been provided with a substantial temporary door or gate.
- H. **ELECTRICAL INSTALLATION:** The Electrical Contractor, not later than 20 calendar days after the machine room slab or that portion of it surrounding the elevator shaft has been placed, shall have furnished and installed temporary or permanent power and light feeders as required for the high rise elevator to be used for temporary service and shall have connected such feeders to the terminals on the motor-generator starter panels or controllers in the machine room, to the signal circuits low voltage transformers for the annunciators and car light outlets in the center of shaft way. The Electrical Contractor shall make all these required connections as soon as the equipment is declared ready for such connections by the Resident Engineer.
- I. When the high rise elevator is completed and ready for temporary operation, the low rise temporary elevator shall be shut down.
- J. **REMOVAL:** When one (1) or more elevators for permanent use have been installed and are in condition for service, and when directed by the Commissioner, the GC Contractor shall remove the temporary enclosures and all temporary elevator equipment, and promptly proceed with the installation of the permanent equipment as required under the Contract.
- K. **INSPECTION:** Before temporary elevator equipment is removed, a joint inspection of the equipment shall be made by the GC Contractor and the Commissioner to determine the condition of this equipment upon the discontinuation of its temporary use. If this inspection determines it necessary, the GC Contractor shall furnish and install new governor and compensating ropes, new traveling cables, new controller parts, etc. The car and counterweight safeties shall be thoroughly cleaned of all dirt and all foreign matter, then properly lubricated and placed in good operating condition to the satisfaction of the Commissioner. If it is determined and ordered by the Commissioner that new hoist ropes are required, such ropes shall be installed and payment therefore will be made in accordance with Article 26 of the Contract.
- L. **REPLACEMENT:** The GC Contractor shall furnish and install new equipment or parts for any equipment or parts of the temporary elevator installations that were damaged, destroyed, or that indicate excessive wear or corrosion, excepting the replacement of hoisting ropes. All shaft ways, pits, motor rooms and sheaves spaces used for temporary operation of elevators shall be thoroughly cleaned down. Where



lubricated rails are used they shall be washed down, if roller guides are used, all rust, dirt, etc., must be removed from the rails. The full cost of parts replacement cleaning, etc., shall be borne by the GC Contractor except for the replacement of hoisting ropes.

- M. **LIMITATIONS OF USE:** The temporary elevator shall not be used during its operation for the hoisting of materials or the removal of rubbish, but shall be limited only to the transportation of employees of all Contractors and the representatives of DDC and other Governmental Agencies having jurisdiction of work at the project. However, the Resident Engineer may grant special permission at specified times to the various Contractors to hoist materials, which in the Resident Engineer's opinion will not overload or damage the elevator installation, but only after such times as all plastering has been completed from the second floor up. The particular Contractor using the elevator for the hoisting of its material shall be responsible for any damage to the elevator during the entire period of such use. The GC Contractor shall give notification in writing to the Resident Engineer of any alleged damage to the elevator installation within 24 hours after the elevator has been employed for the hoisting of materials by the other Contractors. As indicated above the GC Contractor shall be responsible for the replacement of any equipment or parts of the temporary elevator that have been damaged.
- N. **PAYMENT FOR USE:** The GC Contractor shall be paid for its operation and maintenance of each temporary elevator or permanent elevator used for temporary service at the daily rate indicated under the item of its Contract. All other costs in connection with elevator installation and equipment, excepting Electrical Work done by the Electrical Contractor under its Contract, shall be included in the Total Bid Price submitted by the Electrical Contractor for Electrical Work.
- O. **LIQUIDATED DAMAGES:** The GC Contractor will be charged at the rate of \$100 per day for each day it fails to provide the temporary elevator service described in this Section beginning with the 31st working day after the 12th Floor slab, or that portion of the 12th Floor slab surrounding the elevator shaft, has been placed and stripped. This charge will be deducted from any amount due and owing to the GC Contractor.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB SECTION 3.3

3.3

TEMPORARY USE, OPERATION AND MAINTENANCE OF ELEVATORS DURING CONSTRUCTION FOR EXISTING BUILDINGS:

- A. The GC Contractor may use, at the Commissioner's discretion, one (1) selected elevator in the project for temporary operation by the GC Contractor for the transportation of employees of all Contractors and representatives of DDC and other Governmental Agencies having jurisdiction over work at the Project. The operation of the temporary elevator and all equipment and/or parts utilized in connection therewith shall be in accordance with the rules and regulations of all agencies and/or entities having jurisdiction over elevators in temporary use.
- B. **RESPONSIBILITY:** The GC Contractor shall be responsible for any injury to persons or damage to property arising out of the temporary elevator and all equipment and/or parts utilized in connection therewith.
- C. **ACTIVATION TIME:** The GC Contractor shall keep the temporary elevator activated from a period of time of 15 minutes before the established starting time of that trade which starts work earliest in the morning to 15 minutes after the established quitting time of that trade which stops work latest in the evening. This applies to every day in the week, which is established as a regular working day for the aforementioned trades.
- D. **REPLACEMENT:** The GC Contractor shall furnish and install new equipment or parts for any equipment or parts of the elevator for temporary operation that were damaged, destroyed, or that indicate excessive wear or corrosion, excepting the replacement of hoisting ropes. All shaft ways, pits, motor rooms and sheave spaces used for temporary operation of elevators shall be thoroughly cleaned down. Where



lubricated rails are used they shall be washed down, if roller guides are used, all rust, dirt, etc., must be moved from the rails. The full cost of parts replacement, cleaning, etc., shall be borne by the GC Contractor except for the replacement of hoisting ropes. If it is determined and ordered by the Commissioner that new hoist ropes are requested, such ropes shall be installed and payment therefore will be made in accordance with Article 26 of the Contract.

- E. **LIMITATIONS OF USE:** The temporary elevator shall not be used during its operation for the hoisting of materials or the removal of rubbish, but shall be limited only to the transportation of employees of all Contractors and the representative of DDC and other Governmental Agencies having jurisdiction of work at the project. However, the Resident Engineer may grant special permission at specified times to the various Contractors to hoist materials which, in the Resident Engineer's opinion, will not overload or damage the elevator installation. The particular Contractor using the elevator for the hoisting of its material shall be responsible for any damage to the elevator during the entire period of such use. The GC Contractor shall give notification in writing to the Resident Engineer of any alleged employed for the hoisting of materials by the particular Contractor(s). As indicated above the GC Contractor shall be responsible for the replacement of any equipment or parts of the temporary elevator that have been damaged.
- F. **COSTS:** The GC Contractor shall pay all costs for the operation and maintenance of the elevator for temporary operation. All other costs in connection with the elevator and equipment excepting electrical work done by the Electrical Contractor under its Contract, shall be included in the Total Bid price submitted by the GC Contractor.
- G. **LIQUIDATED DAMAGES:** The GC Contractor will be charged at the rate of \$100 per day for each day it fails to provide elevator services described in this section beginning with 15 consecutive calendar days from notice to proceed. This charge will be deducted from any amount due and owing to the GC Contractor.

3.4 TEMPORARY HOISTS AND HOISTWAYS (FOR MATERIAL AND PERSONNEL):

- A. **RESPONSIBILITY:** The GC Contractor shall provide adequate numbers of material hoists for the most expeditious performance of all parts of its work. All other Contractors are required to provide their own facilities for the hoisting of materials under their respective Contracts. However, these Contractors may make arrangements, whenever possible, with the GC Contractor for the use of its hoist upon such terms and conditions as it may prescribe.
- B. **LOCATIONS:** No hoists shall be constructed at such locations as will interfere with, or affect the construction of, floor arches, or the work of other Contractors. The hoists may be located at the exterior sides of the structure or in the courtyard and extend upward adjacent to the line of window openings. The hoists shall be located a sufficient distance from the exterior walls and be so protected as to prevent any of the permanent work from being damaged, stained or marred.
- C. **ELEVATOR SHAFT:** Wherever possible, one or more of the permanent elevator shafts may be used as temporary hoist ways, providing such use complies with the requirements of the Building Code of the City of New York and has been approved by the Commissioner, and providing further it entails no interference with the progress of the work of any Contractor.
- D. **PROTECTION FOR INTERIOR HOISTS:** All interior material hoist ways shall be enclosed on each floor and shall be adequately protected with appropriate safety guards. In no event shall the protection be less than that required by law.



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Division 01 – DDC STANDARD GENERAL CONDITIONS
MULTIPLE CONTRACT PROJECTS
Issue Date - January 15, 2015

END OF SECTION 01 54 11

TEMPORARY ELEVATORS AND HOISTS
01 54 11 - 8



SECTION 01 54 23
TEMPORARY SCAFFOLDING AND PLATFORMS

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings; (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].
- B. Section 01 35 26: Safety Requirements Procedures.
- C. Each Contractor shall comply with the requirements of "*The City of New York Department of Design and Construction Safety Requirements*". This document is included in the Information for Bidders.

1.2 SUMMARY:

- A. This Section includes administrative and general procedural requirements for Temporary Scaffolding and Platforms, including:
 - 1. Conformance
 - 2. Responsibility
 - 3. Jobsite Documentation and Submittals
 - 4. Inspections
- B. This Section governs ALL scaffold used on DDC project sites including, but not limited to, Suspended Scaffold, Supported Scaffold and Sidewalk Sheds.

1.3 CONFORMANCE:

- A. Unless otherwise indicated, the GC Contractor is responsible for providing, erecting, installing and maintaining all temporary scaffolding and platforms which shall comply with requirements of Chapter 33 (Safeguards During Construction or Demolition) of the NYC Building Code, NYC Local Law 52 of 2005, OSHA Construction Standard 1926 Subpart L, and furnishing the items and personnel set forth in this section.

1.4 RESPONSIBILITY:

- A. Jobsite Safety Coordinator: The GC Contractor shall designate and employ a Jobsite Safety Coordinator, who shall be a competent person, who shall have a daily presence on the project site during scaffold use. This designee must possess and maintain a valid New York City Department of Buildings supported scaffold certificate of completion. An alternate shall also be designated, in the event that the Jobsite Safety Coordinator is absent. The Jobsite Safety Coordinator shall:
 - 1. Verify completeness of documentation and submittals (as described below).
 - 2. Verify that inspections are performed, including pull tests (see below), reports are filed and reported deficiencies are corrected.
 - 3. Monitor trades using scaffold.
 - 4. Limit access to scaffold areas that are tagged for non-use.
 - 5. Inform trades of scaffold load limitations.
 - 6. Monitor loading of decks.
 - 7. Verify that any ties that are temporarily removed are properly restored in the same shift.
 - 8. Verify that outriggers and planks that are moved are properly set up and secured.
 - 9. Verify that all scaffold decks in use have proper access/egress.
 - 10. Verify that all open sides of decks in excess of 14 inches have proper guardrails and toe-boards.



11. Notify appropriate parties, including but not limited to the Resident Engineer, site safety coordinator / monitor, site safety consultant, scaffold users, contractor and the scaffold engineer, of misuses, non-conformances, hazards and accidents.
 12. Keep a log of significant actions and events connected with the scaffolding.
- B. The GC Contractor shall be responsible for erection, maintenance and dismantling of the scaffold / shed in conformance with the New York City Building Code and OSHA requirements, contract documents and engineering specifications. The GC Contractor shall also be guided by generally accepted standards of scaffold industry practice as promulgated by the Scaffold Industry Association.
- C. The GC Contractor shall require the subcontractor responsible for erecting the scaffolding to engage a Scaffold Engineer, licensed as a professional engineer by the State of New York. The Scaffold Engineer shall be responsible to ensure the following: (1) that the installation design is in compliance with requirements of the New York City Building Code and OSHA, (2) that the design comports with the capabilities of the components and the characteristics of the site, (3) that scaffold loads on the host building, including netting, have been properly considered, and (4) that the design documents provide accurate information for erectors and users.
- D. Scaffold users are trade contractors assigned to work on the scaffold. Training certificates from a New York City Department of Buildings approved training provider are mandatory. These users have the duty to become familiar with the New York City Building Code and OSHA requirements germane to users, to obey the instructions of the Jobsite Safety Coordinator and inform the Jobsite Safety Coordinator of known hazards, non-conformances or violations.

1.5 JOBSITE DOCUMENTATION AND SUBMITTALS:

The GC Contractor shall prepare, obtain and submit the following to the Resident Engineer:

- A. NYC Department of Buildings permit(s) for scaffold and sidewalk sheds (as applicable) including filing applications signed and sealed by a Professional Engineer licensed in the State of New York;
- B. Site logistics plan / site safety plan;
- C. Installation drawing(s), design and product data to be provided for all scaffold(s) and shed(s) must include, at a minimum:
 1. Plan(s);
 2. Elevation(s);
 3. Duty load designation; "standard" (150 psf live load) or "heavy duty" (300 psf live load).
 4. Details including base support, anchors and ties;
 5. Notes and specifications including load limits, number of planked levels, tie spacing, netting, and sequence of installation and removal.
 6. Anchorage into sound material.
 7. Load limits based on pull tests;
 8. Specifications for pull test(s), method, proof load and the number of trials;
 9. Elevations, levels or heights, where anchorage is made into masonry;
 10. Specifications for frames, planks, screw jacks, anchors, and any other ancillary hardware;
 11. Samples for anchors, ties and netting;
 12. Sequence of operations for erection and demolition;
 13. Location plan, heights, widths, "jumps" over doorways and driveways;
 14. Specify size, maximum span and maximum spacing of headers and stringers;
 15. Specify legs, girts, braces, nailing and connections;
 16. All sidewalk sheds shall be designed, engineered, signed and sealed by a Professional Engineer licensed in the State of New York;
 - a. Generic (not job specific) engineering drawings are satisfactory for standard sheds and arrangements.



- b. Special engineering is required for custom sheds, site-specific problems or non-standard arrangements.

1.6 INSPECTIONS:

- A. Signed inspection reports shall be issued for each inspection and pull-test below, and shall be logged and maintained on site by the Jobsite Safety Coordinator for the duration of the project.
- B. Pull testing shall be required during design, and during or post erection, where anchorage is made into masonry. The Scaffold Engineer shall specify the test method, proof load and the number of trials.
- C. Sidewalk sheds shall be inspected after initial installation, major modification, or damage and thence every three months. Inspections shall be by a Scaffold Engineer for custom sheds and by a Competent Person employed by the GC Contractor for standard sheds.
- D. Scaffolds shall be inspected by the Scaffold Engineer during erection, post-erection and prior to use and thence every three months. The Scaffold Engineer shall repeat inspections after major alteration/modification, damage.
- E. A Qualified Person assigned by the GC Contractor shall inspect the progress of erection and dismantling, and the condition and integrity of the sidewalk sheds after high winds, major storms and at least once per month during usage.
- F. A Qualified Person assigned by the GC Contractor shall inspect the progress of erection and dismantling at least weekly, and the condition and integrity of the scaffold after high winds, major storms and at least once per month during usage.
- G. Scaffolds and Sidewalk Sheds shall be inspected daily by the Jobsite Safety Coordinator or alternate prior to use by scaffold users. The inspection results must be recorded in the maintenance log, available on-site at all times.
- H. At the completion of the project, submit all inspection documents as Miscellaneous Record Documents in accordance with Section 01 78 39, CONTRACT RECORD DOCUMENTS.

1.7 LADDERS AND STAIRS:

- A. The GC Contractor shall provide and maintain ladders or temporary stairs extending from the street to the first story, and to and from every floor and roof level of the project.

1.8 ACCESS AND EXITS:

- A. The ladders or temporary stairs shall be of acceptable size, number and location, so that proper and convenient access may be had by those required to proceed to and from all parts of the project.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 54 23



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
MULTIPLE CONTRACT PROJECTS
Issue Date - - January 15, 2015

NO TEXT

TEMPORARY SCAFFOLDING AND PLATFORMS
01 54 23 - 4



**SECTION 01 73 00
EXECUTION**

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This Section includes general procedural requirements governing execution of the Work including without limitation the following:
1. Delivery of Materials
 2. Contractor's Superintendent
 3. Surveys
 4. Borings
 5. Examination
 6. Preparation
 7. Deferred Construction
 8. Installation
 9. Permits
 10. Transportation
 11. Sleeves and Hangers
 12. Sleeve and Hanger Drawings
 13. Cutting and Patching
 14. Location of Partitions
 15. Furniture and Equipment
 16. Removal of Rubbish and Surplus Material
 17. Cleaning
 18. Security And Protection of Work Site
 19. Maintenance of Site and Adjoining Property
 20. Maintenance of Project Site
 21. Safety Precautions for Control Circuits
 22. Obstructions in Drainage Lines

1.3 RELATED SECTIONS: Include without limitation the following:

- | | | |
|----|------------------|--|
| A. | Section 01 10 00 | SUMMARY |
| B. | Section 01 31 00 | PROJECT MANAGEMENT AND COORDINATION |
| C. | Section 01 33 00 | SUBMITTAL PROCEDURES |
| D. | Section 01 74 19 | CONSTRUCTION WASTE MANAGEMENT & DISPOSAL |
| E. | Section 01 77 00 | CLOSEOUT PROCEDURES |
| F. | Section 01 78 39 | CONTRACT RECORD DOCUMENTS |



1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.5 QUALITY ASSURANCE:

- A. Land Surveyor Qualifications: A professional land surveyor who is licensed in the State of New York and who is experienced in providing land-surveying services of the kind indicated.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION

3.1 DELIVERY OF MATERIALS:

- A. Material Orders: Each Contractor shall furnish to the Commissioner a copy of each material order, indicating date of order and quantity of material, and shall also notify the Commissioner when materials have been delivered to the site and in what quantities.
- B. Ample Quantities: Each Contractor shall deliver materials in ample quantities to insure the most prompt and uninterrupted progress of the work so as to complete the work within the Contract time.
- C. Containers: The manufacturer's containers shall be delivered with unbroken seals and shall bear proper labels.
- D. Each Contractor shall coordinate Deliveries: in order to avoid delaying or impeding the progress of the work of any related Contractor.
- E. Handling: Each Contractor shall provide equipment and personnel to handle products by methods to prevent soiling or damage.
 - 1. Promptly inspect shipments to assure products comply with requirements, quantities are correct, and products are undamaged.
 - 2. Promptly return damaged shipments or incorrect orders to manufacturer.
 - 3. For materials or equipment to be reused or salvaged, use special care in removal, storage and reinstallation to insure proper function in completed work.
- F. Storage: Store products in accordance with provisions of Sub-Section 3.1, and periodically inspect to assure that stored products are undamaged and are maintained under required conditions.
- G. Stacking: All materials shall be properly stacked in convenient places adjacent to the site, or where directed, and protected in a satisfactory manner. Stacked materials shall be so arranged as to not interfere with visibility of traffic control devices.
- H. Overloading: If authority is given to store materials in any part of the project area, they shall be so stored as to cause no overloading.
- I. No Interference: If it becomes necessary to remove and restack materials to avoid impeding the progress of any part of the work or interfering with the work to be done by any other Contractor, the relevant Contractor shall remove and restack such materials at no additional cost to the City.



3.2 CONTRACTOR'S CONSTRUCTION SUPERINTENDENT:

- A. Contractor's Construction Superintendent: Each Contractor shall devote its time and personal attention to the work and shall employ and retain at the project site, from the commencement until the entire completion of the work, a Contractor's Construction Superintendent. Each Contractor's Construction Superintendent shall be registered with the New York City Department of Buildings in compliance with the Construction Superintendent Rule of the City of New York and shall be competent and capable of maintaining proper supervision and care of the work and shall be acceptable to the Commissioner, who, in the absence of the applicable Contractor, and irrespective of any superintendent or foreman employed by any subcontractor, shall see that the instructions of the Commissioner are carried out.
- B. Replacement: Each Contractor's Construction Superintendent on the job shall not be changed or removed without the consent of the Commissioner.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.3

3.3 SURVEYS:

- A. Line and Grade: The City will establish a baseline and bench mark near the site of the work for use of the relevant Contractor(s) in connection with the performance of the work.
- B. Responsibility: Each Contractor shall establish all other lines and elevations required for its work and shall be solely responsible for the accuracy thereof.
- C. Safeguard All Points: Each Contractor shall safeguard all points, stakes, grade marks and bench marks made or established by each Contractor on the work, shall re-establish same if disturbed and bear the entire expense of rectifying the work improperly installed due to not maintaining, not protecting or removing without authorization such established points, stakes, or marks.
- D. City Monuments and Markers: No work shall be performed near City monuments or marks so as to disturb them until the said monuments or marks have been referenced or reset or otherwise disposed of by the relevant Agency or party who installed them.
- E. Foundations: The GC Contractor shall furnish certification from a licensed Surveyor that all portions of the foundation work are located in accordance with the Contract Drawings and at the elevations required thereby. This certification shall show the actual locations and the actual elevations of all the work in relation to the locations and elevations shown on the Contract Drawings, including but not restricted to the following:
 - 1. The locations and elevations of all piles, if any.
 - 2. Elevations of tops of all spread footings, tops of pile caps, and tops of all foundation walls, elevator pit walls and ramp walls.
 - 3. Location of all footing centers and pier centers including those for exterior wall columns.
 - 4. Location of all foundation walls including wall columns, elevator pit walls and ramp walls.
- F. Wall Lines: After the first courses of masonry or stone have been laid, the GC Contractor shall establish the permanent lines of exterior walls. The GC Contractor shall furnish promptly, certification from a licensed Surveyor, in the form of signed original drawings showing the exact location of such wall lines, of all portions of all structures. Except at its own risk, the GC Contractor shall not proceed further with the erection of walls until the Surveyor's certification has been submitted and verified for correct location of wall lines.
- G. Surveyor: The Surveyor selected for any of the purposes mentioned in Paragraph E and Paragraph F above, and Paragraph I below, shall be a land Surveyor licensed in the State of New York and shall be subject to the approval of the Commissioner. The Surveyor shall not be a regular employee of the GC Contractor, nor shall the Surveyor have any interest in the Contract. The Surveyor shall not be employed by the GC Contractor in laying out any work, it being intended that the Surveyor's certification shall



represent an independent and disinterested verification of such layout. The Surveyor shall report to the Department of Design and Construction's Resident Engineer each time upon arrival to and departure from the site and review with the Resident Engineer the data required for the project.

- H. Final Certification: Final certification shall be submitted upon completion of the work or upon completion of any subdivision of the work as directed by the Commissioner. Any exceptions or deviations from the drawings shall be noted on the final certificate and there shall be included any maps, plates, notes, pertinent documents and data necessary, in the opinion of the Commissioner, to constitute a full and complete report.
- I. Final Survey: The GC Contractor shall submit to the Department of Design and Construction for submission to the Department of Buildings a final Survey by the licensed Surveyor showing the location of the new Structure, before completion of the Structure. This Survey shall show the location of the first tier of beams or of the first floor; the finish grades of the open spaces on the plot; the established curb level and the location of all other Structures on the plan, together with the location and boundaries of the lot or plot upon which the Structure is constructed, curb cuts, all yard dimensions, etc.

REFER TO THE APPENDUM FOR THE APPLICABILITY OF SUB SECTION 3.4

3.4

BORINGS:

- A. The work of this Sub-Section shall be the responsibility of the GC Contractor, unless otherwise indicated.
- B. Reference Drawings: The Boring Drawings as listed on the title sheet are for information to the bidder and are to be used under the conditions as follows:
 - 1. Boring Logs: shown on the Boring Drawings, record information obtained under engineering supervision in the course of exploration carried out by or under the direction of forces of the Department of Design and Construction at the site.
 - 2. Soils and Rock Samples: All inferences are drawn from the indications observed as made by engineering and scientific personnel. All such inferences and all records of the work including soil samples and rock cores, if any, are available to bidders for inspection.
 - 3. Certification of Samples: The City certifies that the work was carried out as stated, and that the soil samples and rock cores, if any were referred to, were actually taken from the site at the times, places and in the manner indicated. The samples are available for inspection in the Department of Design and Construction Subsurface Exploration Section.
 - 4. Bidder's Responsibility: The bidder, however, is responsible for any conclusions to be drawn from the work. If the bidder accepts those of the City, it must do so at its own risk. If the bidder prefers not to assume such risk, the bidder is under the obligation of employing its own experts to analyze the available information, and must be responsible for any consequences of acting on their conclusions.
 - 5. Continuity Not Guarantee: The City does not guarantee continuity of conditions shown at actual boring locations over the entire site. Where possible, borings are located to avoid all obstructions and previous construction which can be found by inspection of the surface and the bidder is required to estimate the influence of such features from its own inspection of the site.

3.5

EXAMINATION:

- A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
 - 1. Before construction, verify the location and points of connection of utility services.



- B. Existing Utilities: The existence and location of underground utilities and other construction indicated as existing are not guaranteed. Before beginning site work, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- C. Acceptance of Conditions: Examine substrates, areas, and conditions, with the subcontractor responsible for installation or application present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.6 ENVIRONMENTAL ASSESSMENTS:

- A. City Responsibilities: An Environmental Assessment and survey is performed by the NYC DDC and its findings are included in the Contract Documents. In accordance with the NYC Administrative Code Title 15 Chapter 1 an asbestos survey is required to be performed by an Asbestos Investigator certified by the NYC Department of Environmental Protection (DEP) to identify the presence of asbestos containing material (ACM) prior to any alteration, renovation or demolition activity. The findings of such survey are required for the submission of approvals and permits issued by the NYC Department of Buildings (DOB). When the findings indicate that asbestos containing material is present and will be disturbed during the alteration, renovation or demolition activity then abatement design specifications will be incorporated into the contract documents. The GC Contractor shall comply with all federal, state and local asbestos regulations affecting the work for this Contract.
- B. Contractor Responsibility: The GC Contractor shall comply with all federal, state and local environmental regulations, including without limitation USEPA and OSHA regulations which require the GC Contractor to assess if lead based paint will be disturbed during the work in order to protect his/her workers and the building occupants from migration of lead dust into the air. The GC Contractor shall comply with all federal, state and local environmental waste disposal regulation which may be required during the work. The GC Contractor is required to hire licensed abatement and disposal companies for the requisite work.

3.7 PREPARATION:

- A. Field Measurements: Each Contractor shall verify all dimensions and conditions on the job so that all work will properly join the existing work.
- B. Each Contractor, before commencing work, shall examine all adjoining work on which its work is in any way dependent on good workmanship in accordance to the intent of the Specification and Contract Drawings. The Contractor shall report to the Commissioner any condition that will prevent it from performing work that conforms to the required standard.



- C. Existing Utility Information: Furnish information to the Commissioner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- D. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

3.8 DEFERRED CONSTRUCTION:

- A. Where necessity for deferred construction is certified by the Commissioner, in order to permit the installation of any item or items of equipment required to be furnished and installed concurrent with the time allowed for doing and completing the work of the Contract, each Contractor shall defer construction work limited to adequate areas as approved by the Commissioner.
- B. Each Contractor shall confer with the affected subcontractors and ascertain arrangements, time and facilities necessary to be made by the Contractor in order to execute the provisions specified herein.

3.9 INSTALLATION:

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work and work of other sub-contractors to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by the Design Consultant.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.



3.10 PERMITS:

Each Contractor shall comply with all local, state and federal laws, rules and regulations affecting the Work of this Project, including, without limitation, (1) obtaining all necessary permits for the performance of the Work prior to commencement thereof, and (2) complying with all requirements for the disposal of demolition and/or construction debris, waste, etc., including disposal in City landfills. Each Contractor shall be responsible for all costs in connection with such regulatory compliance, unless otherwise specified in the Contract.

3.11 TRANSPORTATION:

- A. **Availability:** It shall be the duty of each Contractor to determine the availability of transportation facilities and dockage for the use of its employees, equipment and material and the conditions under which such use will be permitted.
- B. **Costs:** If transportation facilities and dockage are available and are permitted to be used by the governmental agency having jurisdiction, the applicable Contractor shall pay all necessary costs and expenses, and abide by all rules and regulations promulgated in connection therewith.
- C. **Vehicles:** With respect to the use of vehicles on highways and bridges, each Contractor's attention is directed to the limitations set forth in the Rules of the City of New York, Title 34, Chapter 4, Section 4-15.
- D. **Continued Use:** It is understood that the Commissioner makes no warranty as to the continued use by each Contractor of such facilities.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.12

3.12 SLEEVES AND HANGERS:

- A. **Coordinate with Progress Schedule:** Contractors required to furnish and install conduits, outlets, piping sleeves, boxes, inserts and all other materials and equipment that is to be built into the work performed by the GC Contractor, shall promptly furnish and set such sleeves or other materials in conformity with the requirements of the project.
- B. **Cooperation of Contractors:** All Contractors and their subcontractors shall fully cooperate with each other in connection with the performance of the above work as "cutting in" new work is neither contemplated nor will it be tolerated.
- C. **Timeliness:** In the event that timely delivery of sleeves and other materials cannot be made, and to avoid delay, the affected Contractor may arrange to have boxes or other forms set at the locations where the piping or other material is to pass through or into the slabs, walls or other work. Upon the subsequent installation of the sleeves or other material, the GC Contractor shall fill around them with materials as required by the Contract. The necessary expenditures incurred for the boxing out and filling in shall be borne by the Contractor or Contractors responsible therefore.
- D. **Inserts:** The GC Contractor is to install strip inserts four (4) foot on center and perpendicular to beams in ceiling slabs of boiler, machine and mechanical equipment rooms. Inserts are to be installed for strippable concrete slabs only.



REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.13

3.13 SLEEVE AND PENETRATION DRAWINGS:

- A. As soon as practicable after the commencement of work and when the order in which concrete for the first slabs, walls, etc. to be poured is determined, the Plumbing, HVAC and Electrical Contractors shall submit to the Resident Engineer a sketch indicating the location and size of all penetrations for sleeves, ducts, etc. which will be required to accommodate the mechanical trades, in order to determine if such penetrations will materially weaken the project's structure. The sketch shall be stamped and returned if approved and/or comments will be transmitted. Each Contractor shall continue to submit sketches as the pouring schedule and the concrete work progresses and, until approvals for the penetration sketches have been given. Each Contractor shall not predicate their layout work on unapproved sketches.

3.14 CUTTING AND PATCHING:

- A. Responsibility: Each Contractor shall do all cutting, patching and restoration required by its work, unless otherwise particularly specified in the Specifications of its Contract.
- B. Restore Work: Each Contractor shall restore any work they damage that is the work of another Contractor.
- C. Competent Workers: All restoration work shall be done to the satisfaction of the Commissioner by competent workers skilled in the trade required by such restoration. If, in the judgment of the Commissioner, workers engaged in restoration work are incompetent, they shall be replaced immediately by competent workers.
- D. Structural Elements: Do not cut and patch structural elements without the prior approval, in writing, of the Resident Engineer.
- E. Operational Elements: Do not cut and patch operating elements and related components.
- F. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Commissioner's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- G. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.
- H. Removals: Each Contractor must remove from the premises all demolished materials of every nature or description resulting from cutting, patching and restoration work, in accordance with the requirements hereinafter stipulated under Sub-Section 3.17 herein and as further required in Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 3.15

3.15 LOCATION OF PARTITIONS:

- A. Within three (3) weeks after the concrete slabs have been poured on each floor level, the GC Contractor shall immediately locate accurately all of the partitions, including the door openings, on the floor slabs in a manner approved by the Resident Engineer.



3.16 FURNITURE AND EQUIPMENT:

- A. Responsibility: Each Contractor is responsible for moving all loose furniture and/or equipment in all areas where the location of such furniture and/or equipment interferes with the proper performance of its work.
- B. Protection: All such furniture and/or equipment must be adequately protected with dust cloths and returned to their original locations when directed to do so by the Resident Engineer.

3.17 REMOVAL OF RUBBISH AND SURPLUS MATERIALS:

- A. Of the waste that is generated during demolition, as many of the waste materials as economically feasible, and as stated here, shall be reused, salvaged, or recycled. Waste disposal in landfills shall be minimized. Comply with requirements of Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.
- B. Rubbish: Rubbish shall not be thrown from the windows or other parts of the project. Mason's rubbish, dirt and other dust-producing material shall be wetted down periodically.
- C. Location: Each Contractor shall clean Project site and work area daily and sweep up and deposit, at a location designated on each floor by the GC Contractor, all of its rubbish, debris and waste materials, as it accumulates and when directed by the Resident Engineer. Wood crating shall be broken up, neatly bundled, tied and stacked ready for removal and be deposited at a location designated on each floor by the GC Contractor.
 - 1. Comply with requirements in NYC Fire Department for removal of combustible waste materials and debris.
 - 2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 degrees F (27 degrees C).
 - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- D. Laborers: Each Contractor shall be responsible for the removal of all rubbish, etc., from the site. Each Contractor shall remove from the designated locations all piles of rubbish, debris, waste material and wood crating as they accumulate and when directed by the Resident Engineer, and shall remove them from the site. Each Contractor shall employ and keep engaged for this purpose an adequate number of laborers.
- E. Surplus Materials: Each Contractor shall remove from the site all surplus materials when there is no further use for same.
- F. Tools And Materials: At the conclusion of the work, all erection plant, tools, temporary structures and materials belonging to each Contractor shall be promptly removed.
- G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

3.18 CLEANING:

- A. Each Contractor shall thoroughly clean all equipment and materials furnished and installed and shall deliver such materials and equipment undamaged in a clean and new appearing condition up to date of Final Acceptance.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended.



If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

- D. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- E. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration up to date of Final Acceptance.
- F. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration up to date of Final Acceptance.

3.19 SECURITY AND PROTECTION OF WORK SITE:

- A. Each Contractor shall provide protection of its installed work, including appropriate protective coverings and maintain conditions that ensure installed Work is without damage or deterioration up to date of Final Acceptance.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.
- C. Secure and protect work and work site against damage, loss, injury, theft and/or vandalism.
- D. Maintain daily sign-in sheets of workers and visitors and make the sheets available to the Commissioner.

3.20 MAINTENANCE OF SITE AND ADJOINING PROPERTY:

- A. The GC Contractor shall take over and maintain the Project site, after order to start work.
- B. The GC Contractor shall be responsible for the safety of the adjoining property, including sidewalks, paving, fences, sewers, water, gas, electric and other mains, pipes and conduits etc. until the date of Final Acceptance. The GC Contractor shall, at its own expense, except as otherwise specified, protect same and maintain them in at least as good a condition as that in which the GC Contractor finds them.
- C. All pavements, sidewalks, roads and approaches to fire hydrants shall be kept clear at all times, maintained and repaired to serviceable condition with materials to match existing.
- D. Provide and keep in good repair all bridging and decking necessary to maintain vehicular and pedestrian traffic.
- E. The GC Contractor shall also remove all snow and ice as it accumulates on the sidewalks within the Contract Limits Lines.

3.21 MAINTENANCE OF PROJECT SITE:

- A. The GC Contractor shall take over and maintain all project areas, after order to start work.
- B. Until the date of Final Acceptance, the GC Contractor shall be responsible for the safety of all project areas, including water, gas, electric and other mains and pipes and conduits and shall at the GC Contractor's own expense, except as otherwise specified, protect same and maintain them in at least as good condition as that in which the GC Contractor finds them.
- C. All pavements, sidewalks, roads and approaches to fire hydrants shall be kept clear at all times, maintained, and if damaged, repaired to serviceable conditions with materials to match existing.
- D. The Contractor for General Construction Work shall keep the space for the Resident Engineer in a clean condition.



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3.22 SAFETY PRECAUTIONS FOR CONTROL CIRCUITS:

- A. Control circuits, the failure of which will cause a hazard to life and property, shall comply with the New York City Electrical Code.

3.23 OBSTRUCTIONS IN DRAINAGE LINES:

- A. The GC Contractor shall be responsible for all obstructions occurring in all drainage lines, fittings and fixtures after the installations and cleaning of these drainage lines, fittings and fixtures as certified by the Resident Engineer. Roof drains shall be kept clear of any and all debris. Any stoppage shall be repaired immediately at the expense of the GC Contractor

END OF SECTION 01 73 00

EXECUTION
01 73 00 - 11



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NO TEXT

EXECUTION
01 73 00 - 12



**SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL**

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This section includes administrative and procedural requirements for the management and disposal of construction waste and includes the following requirements:
1. Waste Management Goals
 2. Waste Management Plan
 3. Progress Reports
 4. Progress Meetings
 5. Management Plan Implementation
- B. This Section includes:
1. Definitions
 2. Waste Management Performance Requirements
 3. Reference Resources
 4. Submittals
 5. Quality Assurance
 6. Waste Plan Implementation
 7. Additional Demolition and Salvage Requirements
 8. Disposal

1.3 RELATED SECTIONS: Include without limitation the following:

- A. Section 01 10 00 SUMMARY
- B. Section 01 31 00 PROJECT MANAGEMENT AND COORDINATION
- C. Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION
- D. Section 01 73 00 EXECUTION
- E. Section 01 77 00 CLOSEOUT PROCEDURES
- F. Section 01 78 39 CONSTRUCTION RECORD DOCUMENTS
- G. Section 01 81 13 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or



combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

- C. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk or the like.
- D. Construction and Demolition Waste: Solid wastes typically including building materials, trash debris and rubble resulting from remodeling, repair and demolition operations. Hazardous materials and land clearing waste are not included.
- E. Diversion from Landfill: To remove, or have removed, from the site for recycling, reuse or salvage, material that might otherwise be sent to a landfill.
- F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product.
- G. Recycle (recycling): To sort, separate, process, treat or reconstitute solid waste and other discarded materials for the purpose of redirecting such materials into the manufacture of useful products. Recycling does not include burning, incinerating or thermally destroying waste.
- H. Return: To give back reusable items or unused products to vendors.
- I. Reuse: To reuse excess or discarded construction material in some manner on the Project site.
- J. Salvage: To remove a waste material from the Project site for resale or reuse.
- K. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable and reusable material.
- L. Waste Management Plan: A project-related plan for the collection, transportation and disposal of waste generated at the construction site. The purpose of the plan is to ultimately reduce the amount of material becoming landfill.

1.5 WASTE MANAGEMENT PERFORMANCE REQUIREMENTS:

- A. The City of New York has established that this project shall generate the least amount of waste possible and that processes that ensure the generation of as little waste as possible due to error, inaccurate planning, breakage, mishandling, contamination, or other factors shall be employed.
- B. Of the waste that is generated during demolition, as many of the waste materials as economically feasible, and as stated here, shall be reused, salvaged, or recycled. Waste disposal in landfills shall be minimized.

REFER TO THE ADDENDUM FOR THE APPLICABILITY OF SUB-SECTION 1.5 C

- C. LEED CERTIFICATION: The City of New York will seek LEED (Leadership in Energy and Environmental Design) certification for this Project as indicated in the Addendum to the General Conditions from the U.S. Green Building Council. The documentation required here will be used for this purpose. LEED awards points for a variety of sustainable design measures on a project, one of which is the reuse and recycling of project waste.
- D. DIVERSION REQUIREMENTS. A minimum of 75% of total Project demolition waste (by weight) shall be diverted from landfill. The following waste categories are likely candidates to be included in the diversion plan as applicable for this project:
 - 1. Concrete
 - 2. Bricks
 - 3. Concrete masonry units (CMU)
 - 4. Asphalt



5. Metals (e.g. banding, stud trim, ceiling grid, ductwork, piping, rebar, roofing, other trim, steel, iron, galvanized, stainless steel, aluminum, copper, zinc, brass, bronze)
 6. Clean dimensional wood
 7. Carpet and pad
 8. Drywall
 9. Ceiling tiles
 10. Cardboard, paper, and packaging
 11. Reuse items indicated on the Drawings and/or elsewhere in the Specification
- E. All fluorescent lamps, HID lamps and mercury-containing thermostats removed from the site shall be recycled.
- F. Recycling on the job, subject to the Commissioner's approval, is encouraged on the site itself, such as the crushing and reuse of removed sound concrete and stone. Include these categories in the Waste Management Plan.

1.6 REFERENCES, RESOURCES:

- A. DDC encourages its contractors to seek information from websites and experts in salvage or recycling in order to minimize disposal costs. There are numerous opportunities to sell, salvage, or to donate salvage and accrue tax benefits (which would accrue to each Contractor); also there are outlets that will pick up, and in some cases buy recyclable materials. Examples of information resources are as follows:
1. DDC's Sustainable Design web site:
http://www.nyc.gov/html/ddc/html/design/sustainable_home.shtml This includes a manual on Construction and Demolition Waste Reduction and Recycling, a Sample Waste Management Plan and sample C&D Waste Management log. Standard forms for a Waste Management Plan and a C&D Waste Management Log are included at the end of this section.
 2. Web Resources
(Information only; no warranty or endorsement is implied.)
www.wastematch.org Site of New York Waste Match, a materials exchange database and service
www.bignyc.org Site of Build It Green NYC, a non profit outlet for salvaged and surplus building materials
www.usgbc.org Site of the United States Green Building Council, with a description of the LEED certification process and requirements for C&D waste recycling
www.epa.gov/epawaste/index.htm Site of the U.S. Environmental Protection Agency that discusses construction and demolition waste issues, and links to other resources.

1.7 SUBMITTALS:

- A. The GC Contractor shall be responsible for the development and implementation of a Waste Management Plan for the Project. Each Contractor shall assist in the development of that Plan, and collect and deposit their waste and recyclable materials in accordance with the approved Plan.
- B. DRAFT WASTE MANAGEMENT PLAN. Within fifteen (15) days after receipt of Notice to Proceed, or prior to any waste removal, whichever occurs sooner, the GC Contractor shall submit to the Commissioner a Draft Waste Management Plan. Include separate sections for demolition and



construction waste. The Plan shall demonstrate how the performance goals will be met, and contain the following:

1. List of materials targeted for reuse, salvage, or recycling, and names, addresses, and phone numbers of receiving facilities/companies that will be purchasing or accepting each material.
 2. Description of onsite and/or offsite sorting methods for all materials to be removed from site.
 3. If mixed construction and demolition waste is to be sorted off-site, provide a letter from the processor stating the average percentage of mixed construction and demolition waste they recycle.
 4. Landfill information: Names of landfills where non-recyclable/reusable/salvageable waste will be disposed, and list of applicable tipping fees.
 5. Materials handling procedures: A description of the means by which any recyclable, salvaged, or reused materials will be protected from contamination, and collected in a manner that will meet the requirements for acceptance by the designated recycling processors.
 6. Transportation: A description of the means of transportation and destination for recycled materials.
 7. Meetings: Description of regular meetings to be held to address waste management.
 8. Sample spreadsheet and description of how the implementation of the plan will be documented on a monthly basis.
- C. **FINAL WASTE MANAGEMENT PLAN.** Within fifteen (15) days of Commissioner's approval of the Draft Plan, the GC Contractor shall submit a Final Waste Management Plan.
- D. **PROGRESS REPORTS.** The GC Contractor shall submit monthly a Waste Management Progress Report, containing the following information:
1. Project title, name of company completing report, and dates of period covered by the report
 2. Report on the disposal of all jobsite waste. A DDC C&D Waste Management Log form is available on the DDC Sustainable Design website and included at the end of this section. For each material type recycled, reused, salvaged or land filled, provide the following:
 - a. Date and ticket number of removal
 - b. Identity of material hauler
 - c. Material Category
 - d. Total quantity of waste, in tones/cubic yards, by type
 - e. Quantity of waste salvaged, recycled and/or reused, by type
 - f. Total quantity of waste diverted from landfill (recycled, salvaged, reused) as a percentage of total waste
 - g. Recipient of each material type
 3. Provide monthly and cumulative project totals of waste, quantity diverted, and percentage diverted.
 4. Note that the unit of measure may be either tons or cubic yards, but must be consistent for all shipments and all materials throughout the project. Reports with inconsistent or mixed units will not be reviewed and will be returned for re-submission.
 5. Include legible copies of on-site logs, weight tickets and receipts. Receipts shall be from charitable organizations, recycling and/or disposal site operators who can legally accept the materials for the purpose of reuse, recycling or disposal. Contractor shall save such original documents for the life of the project plus seven (7) years.



- E. LEED Submittal: For LEED designated projects submit LEED Letter Template for the applicable credit, signed by each Contractor, tabulating total waste material, quantities diverted and means by which it is diverted, and statement that requirements for the credit have been met.
- F. Refrigerant Recovery. Submit Qualification data for Refrigerant recovery technician and statement of refrigerant recovery, signed by the refrigerant recovery technician responsible for recovering refrigerant stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.8 QUALITY ASSURANCE:

- A. The GC Contractor shall designate a Waste Management Coordinator, to ensure compliance with this section. Coordinator shall be present at Project site full time for the duration of the project.
- B. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.
- C. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
- D. Waste management plans, documentation and implementation shall be discussed at the following meetings:
 - 1. Pre-demolition kick-off meeting
 - 2. Pre-construction kick-off meeting
 - 3. Regular job-site meetings
 - 4. Contractor toolbox meetings

PART II – PRODUCTS (Not Used)

PART III – EXECUTION

3.1 WASTE PLAN IMPLEMENTATION:

- A. The GC Contractor shall implement the Waste Management Plan, coordinate the Plan with each Contractor and all affected subcontractors, and designate one individual as the Construction Waste Management Representative, who will be responsible for communicating the progress of the Plan with the Commissioner on a regular basis, and for assembling the required LEED documentation.
- B. Each Contractor shall be responsible for the provision of containers and the removal of all waste, non-returned surplus materials, and rubbish from the site in accordance with the approved Waste Management Plan. Each Contractor shall oversee and document the results of the Plan. Monies received for salvaged materials shall remain with the applicable Contractor, except the monies for those items specifically identified elsewhere in the specifications, or indicated on the drawings as belonging to others.
- C. Responsibilities of Subcontractors: Each subcontractor shall be responsible for collecting its waste, non-returned surplus materials, and rubbish, in accordance with the Waste Management Plan.
- D. Distribution. The GC Contractor shall distribute copies of the Waste Management Plan to each Contractor, Subcontractors, Resident Engineer, Construction Manager, and Commissioner.
- E. Instructions. The GC Contractor shall provide on-site instruction of proper waste management procedures to be used by all parties in appropriate stages of the Project.



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- F. Procedures. Conduct waste management operations to ensure minimum interference with site vegetation, roads, streets, walks and other adjacent occupied and used facilities.
1. Collect co-mingled waste and/or separate all recyclable waste in accordance with the Plan Specific areas on the Project site are to be designated, and appropriate containers and bins clearly marked with acceptable and unacceptable materials.
 2. Inspect containers and bins for contamination and remove contaminated materials if found.
 3. Comply with the General Conditions for controlling dust and dirt, environmental protection, and noise control.

3.2 ADDITIONAL DEMOLITION AND SALVAGE REQUIREMENTS:

- A. Demolition and salvage of additional items indicated in other sections of the Project Specifications require special attention as part of the overall 75 % diversion from landfill. Specific requirements for special attention are designated in other sections of the Project Specifications.

3.3 DISPOSAL:

- A. General. Except for items or material to be salvaged, recycled or otherwise reused, remove waste material from the Project site and legally dispose of them in a manner acceptable to authorities having jurisdiction.
1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on site.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning. Do not burn waste materials
- C. Disposal. Transport waste materials off Project Site and legally dispose of them.

END OF SECTION 01 74 19

Construction and Demolition Waste – Management Log



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NO TEXT



**SECTION 01 77 00
CLOSEOUT PROCEDURES**

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This Section includes administrative and general procedural requirements for Closeout Procedures, including without limitation the following:
1. Definitions
 2. Substantial Completion
 3. Final Acceptance
 4. Warranties
 5. Final Cleaning
 6. Repair of the Work
- B. LEED: Refer to the Addendum to identify whether this project is designed to comply with a Certification Level according to the U.S. Green Building Council's Leadership in Energy & Environmental Design (LEED) Rating System, as specified in Section 01 81 13, "SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS."
- C. COMMISSIONING: Refer to the Addendum to identify whether this project will be commissioned by an independent third party under separate contract with the City of New York. Commissioning shall be in accordance with ASHRAE and USGBC LEED- NC procedures, as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS. Each Contractor shall cooperate with the commissioning agent and provide whatever assistance is required.

1.3 RELATED SECTIONS: include without limitation the following:

- A. Section 01 10 00 SUMMARY
- B. Section 01 33 00 SUBMITTAL PROCEDURES
- C. Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT & DISPOSAL
- D. Section 01 78 39 CONTRACT RECORD DOCUMENTS
- E. Section 01 79 00 DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and



specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

- C. **Substantial Completion:** shall mean the written determination by the Commissioner that the Work required under the Contract is substantially, but not entirely, complete.
- D. **Final Acceptance:** shall mean final written acceptance of all the Work by the Commissioner, a copy of which shall be sent to each Contractor.

1.5 SUBSTANTIAL COMPLETION:

- A. **Preliminary Procedures:** Before requesting inspection to determine the date of Substantial Completion, each Contractor shall complete and supply all items required by the contract specifications, General Conditions, Addendum to the General Conditions, change orders or other directives from the Commissioner's representatives. The required items will include all contract requirements for substantial completion, including but not limited to items related to releases, regulatory approvals, warranties and guarantees, record documents, testing, demonstration and orientation, final clean up and repairs, and all specific checklist of items by the Resident Engineer. (See Attachment "A" at the end of this section for sample requirements for Substantial Completion).
- B. Prepare and submit a list to the Resident Engineer of incomplete items, the value of incomplete construction, and reasons the work is not complete.
- C. **Inspection:** Each Contractor shall submit to the Resident Engineer a written request for inspection for Substantial Completion. Within ten (10) days of receipt of the request, the Resident Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. The Resident Engineer may request the services, as required, of the Design Consultant, Client Agency Representative and/or other entities having involvement with the Work to assist in the inspection of the Work. If the Resident Engineer makes a determination that the work is substantially complete and approves the Final Punch List and the date for Final Acceptance, he/she will so advise the Commissioner and recommend issuance of the Certificate of Substantial Completion. If the Resident Engineer determines that the work is not substantially complete, he/she will notify the applicable Contractor of those items that must be completed or corrected before the Certificate of Substantial Completion will be issued.
 - 1 Re-inspection: Contractor shall request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
 - 2 Results of completed inspection will form the basis of requirements for Final Acceptance.

1.6 FINAL ACCEPTANCE:

- A. **Preliminary Procedures:** Before requesting final inspection for Final Acceptance of the Work and Final Payment, each Contractor shall complete the following. (Note that the following are to be completed, submitted as appropriate, and approved by the Commissioner, as applicable, prior to the final inspection and are not to be submitted for approval or otherwise at the final inspection unless specifically indicated). List exceptions in the request.
 - 1. Verify that all required submittals have been provided to the Commissioner including but not limited to the following:
 - a. Manufacturer's cleaning instructions
 - b. Posted instructions
 - c. As-built Record Documents (Drawings, specifications, and product data) as described in Section 01 78 39, CONTRACT RECORD DOCUMENTS, incorporating any changes required by the Commissioner as a result of the review of the submission prior to the pre-final inspection.



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- d. Operation and Maintenance Manuals, including Preventive Maintenance, Special Tools, Repair Requirements, Parts List, Spare Parts List, and Operating Instructions.
 - e. Completion of required Demonstration and Orientation of designated personnel in operation and maintenance of systems, sub-systems and equipment.
 - f. Applicable LEED Building submittals as described in Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS.
 - g. Construction progress photographs as described in Section 01 32 33, PHOTOGRAPHIC DOCUMENTATION.
2. Submit a certified copy of the final approved Punch List of items to be completed or corrected. The certified copy of the Punch List shall state that each item has been completed or otherwise resolved for acceptance, and shall be endorsed and dated by the applicable Contractor(s).
 3. Submit pest-control final inspection report and survey as required in Section 01 50 00, TEMPORARY FACILITIES, SERVICES, AND CONTROLS.
 4. Submit record documents and similar final record information.
 5. Deliver tools, spare parts, extra stock and similar items.
 6. Complete final clean-up requirements including touch-up painting of marred surfaces.
 7. Submit final meter readings for utilities as applicable, a measured record of stored fuel, and similar data as of the date when the City took possession of and assumed responsibility for corresponding elements of the work.
- B. Final Inspection: Each Contractor shall submit to the Resident Engineer a written request for inspection for Final Acceptance of the Work. Within ten (10) days of receipt of the request, the Resident Engineer will either proceed with inspection or notify the applicable Contractor(s) of unfulfilled requirements. The Resident Engineer may request the services, as required, of the Design Consultant, Client Agency Representative and/or other entities having involvement with the Work to assist in the inspection of the Work. If the Resident Engineer finds that all items on the Final Approved Punch List are complete and no further work remains to be done, he/she will so advise the Commissioner and recommend the issuance of the determination of Final Acceptance. If the Resident Engineer determines that the work is not complete, he/she will notify the applicable Contractor(s) of those items that must be completed or corrected before the determination of Final Acceptance will be issued.
- C. Final Acceptance: The Work will be accepted as final and complete as of the date of the Resident Engineer's inspection if, upon such inspection, the Resident Engineer finds that all items on the Punch List are complete and no further Work remains to be done. The Commissioner will then issue a written determination of Final Acceptance.

1.7 WARRANTIES:

- A. The items of materials and/or equipment for which manufacturer warranties are required are listed in Schedule B of the Addendum. For each item of material and/or equipment listed in Schedule B, each Contractor as applicable shall obtain a written warranty from the manufacturer. Such warranty shall provide that the material or equipment is free from defects for the period set forth in Schedule B and will be replaced or repaired within such specified period. Each contractor shall deliver all required warranties to the Commissioner.
- B. Unless indicated otherwise Warranties are to take effect on the date of Substantial Completion.
- C. Submittal Time: Submit written Warranties on request of the Commissioner for designated portions of the Work where commencement of Warranties other than date of Substantial Completion is indicated.
- D. Partial Occupancy: Submit properly executed Warranties to the Commissioner within 15 days of completion of designated portions of the Work that are completed and occupied or used by the City.
- E. Organize the Warranty documents into an orderly sequence based on the Project Specification Divisions and Section Numbers.



1. Bind Warranties in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 2. Identify each binder on the front and spine with the typed or printed title "WARRANTIES;" name and location of Project; Capitol Budget Project Number (FMS ID); and Contractor's name and address.
 3. Provide heavy paper dividers with plastic-covered tabs for each separate Warranty. Mark tab to identify the product or installation.
 4. Provide a typed description of each product or installation being warranted, including the name of the product, and the name, address, and telephone number of the Installer.
- F. When warranted materials and/or equipment require operation and maintenance manuals, provide additional copies of each required Warranty in each required manual. Refer to Section 01 78 39, CONTRACT RECORD DOCUMENTS, for requirements of Operation and Maintenance Manuals.

PART II – PRODUCTS

2.1 MATERIALS:

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART III – EXECUTION

3.1 FINAL CLEANING:

- A. General: Unless otherwise noted, the GC Contractor shall provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 1. Complete the following cleaning operations as applicable before requesting inspection for Final Acceptance of the Work for entire Project or for a portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.



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- h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
 - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - k. Remove labels that are not permanent.
 - l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - 1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
 - m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - n. Replace parts subject to unusual operating conditions.
 - o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - q. The HVAC Contractor shall be responsible to clean ducts, blowers, and coils if units were operated without filters during construction.
 - r. The Electrical Contractor shall be responsible to clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
 - s. Leave Project clean and ready for occupancy.
 - t. Construction Waste Disposal: Comply with waste disposal requirements in Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.
- C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests, as required in Section 01 50 00, TEMPORARY FACILITIES, SERVICES AND CONTROLS. Prepare and submit a Pest Control report to the Commissioner.
- D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on City's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

3.2 REPAIR OF THE WORK:

- A. Subject to the terms of the Contract each Contractor shall complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Each contractor, as applicable shall repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.



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1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.
 - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 01 77 00



SECTION 01 77 00

ATTACHMENT 'A'

The following list is a general sample of Substantial Completion requirements, including but not limited to:

1. Prepare and submit a list to the Resident Engineer, of incomplete items, the value of incomplete construction, and reasons the work is not complete.
2. Obtain and submit any necessary releases enabling the City unrestricted use of the project and access to services and utilities.
3. Regulatory Approvals: Submit all required documentation from applicable Governing Authorities, including, but not limited to, Department of Buildings (DoB); Department of Transportation (DoT); Department of Environmental Protection (DEP); Fire Department (FDNY); etc. Documentation to include, but not limited to, the following:
 - a. Building Permits, Applications and Sign-offs.
 - b. Permits and Sign-off for construction fences; sidewalk bridges; scaffolds, cranes and derricks; utilities; etc.
 - c. Certificates of Inspections and Sign-offs.
 - d. Required Certificates and Use Permits.
 - e. Certificate of Occupancy (C.O.), Temporary Certificate of Occupancy (T.C.O.) or Letter of Completion as applicable.
4. Submit specific warranties required by the specifications, final certifications, and similar documents.
5. Prepare and submit Record Documents as described in Section 01 78 39, **CONTRACT RECORD DOCUMENTS**, including but not limited to; approved documentation from Governing Authorities; as-built record drawings and specifications; product data; operation and maintenance manuals; Final Completion construction photographs; damage or settlement surveys; final property surveys; and similar final record information. The Resident Engineer will review the submission and provide appropriate comments. If comments are significant the initial submission will be returned to the applicable Contractor for correction and re-submission incorporating the comments prior to the Final Inspection.
6. Record Waste Management Progress Report: Submit C&D Waste Management logs, with legible copies of weight tickets and receipts required in accordance with Section 01 74 19, **CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL**.
7. If applicable submit LEED Letter Template in accordance with the requirements of Section 01 81 13, **SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS**.
8. Schedule applicable Demonstration and Orientation required in other Sections of the Project Specifications and as described in Section 01 79 00, **DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION**.
9. Deliver tools, spare parts, extra materials, and similar items to location designated by Resident Engineer. Label with manufacturer's name and model number where applicable.
10. Make final changeover of permanent locks and deliver keys to the Resident Engineer. Advise Commissioner of changeover in security provisions.
11. Complete startup testing of systems as applicable.
12. Submit approved test/adjust/balance records.
13. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements as directed by the Resident Engineer.
14. If applicable complete Commissioning requirements as defined in Section 01 91 13, **GENERAL COMMISSIONING REQUIREMENTS**.
15. Complete final cleaning requirements, including touchup painting.
16. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.



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DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
MULTIPLE CONTRACT PROJECTS
Issue Date - January 15, 2015

NO-TEXT

CLOSEOUT PROCEDURES
01 77 00- 8



SECTION 01 78 39
CONTRACT RECORD DOCUMENTS

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This Section includes administrative and general procedural requirements for Contract Record Documents, including:
1. As-built Contract Record Drawings.
 2. As-built marked-up copies of Record Specifications, addenda and Change Orders.
 3. As-built marked-up Product Data
 4. Record Samples
 5. Construction Record Photographs
 6. Operating and Maintenance Manuals
 7. Final Site Survey
 8. Guarantees and Warranties
 9. Waste Disposal Documentation
 10. LEED Materials and Matrix
 11. Miscellaneous Record Submittals
- B. The Department of Design and Construction, at the start of construction (kick-off meeting), will furnish to each Contractor at no cost a complete set of Contract Drawings Mylars (reproducible) pertaining to the work to be performed under the Contract. It is the responsibility of each Contractor to modify the Contract Drawings to indicate all changes and corrections, if any, occurring in the work as actually installed. Each Contractor is required to furnish all other Mylar (reproducible) drawings, if necessary, such as Addenda Drawings and Supplementary Drawings as may be necessary to indicate all work in detail as actually completed. All professional seals must be blocked out. Title box complete with project title and Design Consultants' names will remain.
- C. Maintenance of Documents and Samples: Each Contractor shall maintain, during the progress of the work, an accurate record of the work as actually installed, on Contract Record Drawings, on Mylar (reproducible), in ink. Store record documents and samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition. Make documents and samples available at all times for the Resident Engineer's inspections.

Each Contractor's attention is particularly directed to the necessity of keeping accurate records of all subsurface and concealed work, so that the Contract Record Drawings contain this information in exact detail and location. Contract Record Drawings shall also show all connections, valves, gates, switches, cut-outs and similar operating equipment.

For projects designated to achieve a LEED rating each Contractor shall receive a copy of the project's LEED scorecard for the purpose of monitoring compliance with the target objectives and to facilitate coordination with the LEED Consultant. Each Contractor shall receive periodic updates of this scorecard,



and is required to submit the final version of the Scorecard at Substantial Completion with other project Record Documents.

1.3 RELATED SECTIONS: include without limitation the following:

- A. Section 01 10 00 SUMMARY
- B. Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION
- C. Section 01 32 33 PHOTOGRAPHIC DOCUMENTATION
- D. Section 01 33 00 SUBMITTAL PROCEDURES
- E. Section 01 77 00 PROJECT CLOSEOUT PROCEDURES

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.5 SUBMITTALS:

A. As-Built Contract Record Drawings: Comply with the following:

1. Progress Submission: As directed by the Resident Engineer, submit progress As-Built Contract Record Drawings at the 50% Construction Completion stage.
2. Final Submission: Before substantial completion payment, each Contractor shall furnish to the Commissioner one (1) complete set of marked-up Mylar (reproducible) As-Built Contract Record Drawings, in ink indicating all of the work and locations as actually installed, plus one (1) set of paper prints which will be furnished to the sponsoring agency by DDC.
3. As-Built Contract Record Drawings shall be of the same size as that of the Contract Drawings, with a one (1) inch margin on three (3) sides and a two (2) inch margin on the left side.
4. Each As-Built Contract Record Drawing shall bear the legend "AS-BUILT CONTRACT RECORD DRAWING" in heavy block lettering, one half (1/2) inch high, and contain the following data:

AS-BUILT CONTRACT RECORD DRAWING

Contractor's Name _____
 Contractor's Address _____
 Made by: _____ Date _____
 Checked by: _____ Date _____

Commissioner's Representatives
 (Resident Engineer) DDC
 (Plumbing Inspector) DDC
 (Heating & Ventilating Inspector) DDC
 (Electrical Inspector) DDC

5. Record Drawing Title Sheet: Each Contractor shall prepare a title sheet, the same size as the Contract Record Drawings, which shall contain the following:



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- a. Heading:
The City of New York
Department of Design and Construction
Division of Public Buildings
 - b. Capital Budget Project Number (FMS ID)
 - c. Name and Location of Project
 - d. Contractor's Name and Address
 - e. Record of changes (a caption description of work affected, and the date and number of Change Order or other authorization)
 - f. List of Record Drawings
- B. Record Specifications, Addenda and Change Order: Submit to the Commissioner two (2) copies each of marked-up Record Specifications, Addenda and Change Orders.
- C. Record Product Data: Submit to the Commissioner two (2) sets of Record Product Data.
- D. Record Construction Photographs: Submit to the Commissioner final as-built construction photographs and negatives of the completed work as described in Section 01 32 33, PHOTOGRAPHIC DOCUMENTATION.
- E. Operating and Maintenance Manuals:
1. Each contractor, as applicable shall submit three (3) copies each of preliminary manuals to the Resident Engineer for review and approval. Each Contractor shall make such corrections, changes and/or additions to the manual until deemed satisfactory by the Resident Engineer. Deliver three (3) copies of the final approved manuals to the Resident Engineer for distribution.
 2. Commissioning: Comply with the requirements of Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS, as well as the requirements set forth in sections of the Project Specifications, for projects designated for Commissioning. Submit four (4) copies each of data designated to be included in the Commissioning Operation and Maintenance Manual to the Resident Engineer. The Resident Engineer will forward such data to the Commissioning Authority/Agent (CxA) for review and comment. Each Contractor shall make such corrections, changes and/or additions to the data until deemed satisfactory and deliver four (4) copies of the final data to the Resident Engineer for use by the Commissioning Authority/Agent (CxA) to prepare the Commissioning Operation and Maintenance Manual.
 - a. Non-Commissioning Data: All remaining data not designated for Commissioning and required as part of Maintenance and Operation Manual shall be prepared and assembled in accordance with the requirements of this section for Operating and Maintenance Manuals.
- F. Final Site Survey: The GC Contractor shall submit Final Site Survey as described in Section 01 73 00, EXECUTION, in quantities requested by the Commissioner, signed and sealed by a Land Surveyor licensed in the State of New York.
- G. Guarantees and Warranties.
- H. Waste Disposal Documents and Miscellaneous Record Documents.



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PART II – PRODUCTS

2.1 CONTRACT RECORD DRAWINGS:

- A. Record Prints: Each Contractor shall maintain one set of blue- or black-line white prints as applicable of the Contract Drawings and Shop Drawings. If applicable, the Record Contract Drawings and Shop Drawings shall incorporate the arrangement of the work based on the accepted Master Coordination Drawing(s) as described in Section 01 33 00, SUBMITTAL PROCEDURES.
1. Preparation: Each Contractor shall mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an understandable drawing technique.
 - c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
 2. Change Orders: All changes from Contract Drawings shall be distinctly encircled and identified by Change Order number correlating to changes listed on the "Title Sheet." Each Contractor shall show within the encircled areas the work as actually installed.
- B. Content: Types of items requiring marking include, but are not limited to, the following:
- 1 Dimensional changes to Drawings.
 - 2 Revisions to details shown on Drawings.
 - 3 Depths of foundations below first floor.
 - 4 Locations and depths of underground utilities.
 - 5 Revisions to routing of piping and conduits.
 - 6 Revisions to electrical circuitry.
 - 7 Actual equipment locations.
 - 8 Duct size and routing.
 - 9 Locations of concealed internal utilities.
 - 11 Changes made by Change Order
 - 12 Changes made following Commissioner's written orders.
 - 13 Details not on the original Contract Drawings.
 - 14 Field records for variable and concealed conditions.
 - 15 Record information on the Work that is shown only schematically.
- C. Progress Record Mylar's (reproducible): As directed by the Resident Engineer at 50% construction completion review marked-up Record Prints with the Resident Engineer and the Design Consultant. When directed by the Resident Engineer transfer progress mark-ups to a full set Mylar's (reproducible) and submit one blue line or black line record copy to the Resident Engineer. The marked-up Mylar's (reproducible) shall be retained by the GC Contractor for completion of mark-up and final submission.
- D. Final Contract Record Mylar's (reproducible): Immediately before final inspection for Certificate of Substantial Completion, each Contractor shall review marked-up Record Prints with the Resident Engineer and the Design Consultant. When authorized, complete mark-up of a full set of corrected Mylar's (reproducible) of the Contract Drawings.



1. Incorporate changes and additional information previously marked on Record Prints. Erase, redraw, and add details and notations where applicable.
2. Refer instances of uncertainty to Resident Engineer for resolution.
3. Print the As-Built Contract Drawings and Shop Drawings for use as Record Transparencies as described in Sub-Section 1.5.

2.2 RECORD SPECIFICATIONS, ADDENDA AND CHANGE ORDERS:

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
 5. Note related Change Orders and Record Drawings where applicable.
 6. Upon completion of mark-up submit two (2) complete copies of the marked-up Record Specifications to the Commissioner.

2.3 RECORD PRODUCT DATA:

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 3. If possible, a Change Order proposal should include resubmitting updated Product Data. This eliminates the need to mark up the previous submittal.
 4. Note related Change Orders and Record Drawings where applicable.
 5. Upon completion of mark-up submit to the Commissioner two (2) sets of the marked-up Record Product Data.
 6. Where Record Product Data is required as part of Maintenance Manuals, submit marked-up Product Data as an insert in the manual instead of submittal as record Product Data.

2.4 RECORD SAMPLE SUBMITTAL:

- A. Prior to the date of Substantial Completion, each Contractor shall meet with the Resident Engineer at the site to determine which of the Samples maintained during the construction period shall be transmitted to the Commissioner for record purposes.
- B. Comply with the Resident Engineer's instructions for packaging, identification marking and delivery to the DDC. Dispose of other samples as specified for disposal of surplus and waste material.

2.5 OPERATING AND MAINTENANCE MANUALS:

- A. Each Contractor shall provide preliminary and final versions of Operating and Maintenance Manuals required for those systems, equipment and materials listed in other Sections of the Project Specifications.



- B. Format: Prepare and assemble Operation and Maintenance Manuals in heavy-duty, 3-ring, hardback loose leaf binders in the form of an instructional manual. All binders for each discipline shall be the same color. When multiple binders are used, correlate data into related consistent groupings. Binder front shall contain permanently attached labels displaying the following:
1. Heading:
The City of New York
Department of Design and Construction
Division of Public Buildings
 2. Capital Budget Project Number (FMS ID)
 3. Name and Location of Project
 4. Contractor's name and Address
 5. Dates of the work covered by the contents of the Project Manual.
 6. Binder spine shall display Project Number (FMS ID) and date of completion.
- C. Organization: Include a section in the directory for each of the following:
1. List of documents
 2. List of systems
 3. List of equipment
 4. Table of contents
- D. Arrange content by systems under Specification Section numbers and sequence of Table of Contents of the Project manual. Provide tabbed flyleaf for each separate product, equipment and/or system/subsystem with typed description of product and major component parts of equipment.
- E. Safety warnings or cautions shall be visibly highlighted within each maintenance procedure. Use of such highlights shall be limited to only critical items and shall not be used in an excessive manner which would reduce their effectiveness.
- F. For each product or system, list names, addresses and telephone numbers of Subcontractors and Suppliers, including local source of supplies and replacement parts. Vendors and Supplier listings are to include names, addresses and telephone numbers, including nearest field service telephone numbers.
- G. Where contents of the manual include any manufacturer's catalog pages, clearly indicate the precise items and options included in the installation and delete all manufacturers' data regarding products not included in the installation.
- H. All material within manuals shall be new. Copies used for prior submittals or used in construction shall not be used.
- I. Submit preliminary and final manual editions to the Commissioner according to the approved progress schedule.
- J. Manuals shall present all technical material to the greatest extent possible, with respect to text, tabular matter and illustrations. Illustrations shall preferably consist of line drawings. All applicable drawings shall be included. If available, color photograph prints may be included.
- K. Preliminary manual editions shall be as technically complete as the final manual edition. All illustrations shall be in final forms.
- L. Final manual editions shall be technically accurate and complete and shall represent all "as-built" systems, pieces of equipment, or materials, which have been accepted by the Commissioner. All illustrations, text and tabular material shall be in final form. All shop drawings shall be included as specified in individual Specification Sections.
- M. Building products, applied materials, and finishes: Include product data, with catalog number, size, composition, and color texture designations. Where applicable, provide information for re-ordering custom manufactured products.



- N. Instructions for care and maintenance: Include manufacturers' recommendations for cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- O. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical compositions, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- P. Additional Requirements: Specified in individual Specification Sections.

2.6 DEMONSTRATION AND ORIENTATION DVD:

- A. Commissioned and Non-Commissioned Projects: Each Contractor shall submit final version of applicable Demonstration and Orientation DVD recordings in compliance with Section 01 79 00, DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION, and Section 01 91 13 GENERAL COMMISSIONING REQUIREMENTS.

2.7 GUARANTEES AND WARRANTIES:

- A. SCHEDULE B – Requirements for guarantees and warranties for the Project are set forth in Schedule B, which is included as part of the Addendum.
- B. FORM – For all guarantee requirements set forth in Schedule B, each Contractor shall provide a written guaranty, in the form set forth herein.
- C. Submit fully executed and signed manufacturers' Warranties as listed in the Project Specifications and outlined in Schedule B of the Addendum. Refer to Section 01 77 00, CLOSEOUT PROCEDURES for submittal requirements.



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GUARANTY

DDC PROJECT # _____

PROJECT DESCRIPTION _____

CONTRACT # _____

SPECIFICATION SECTION # AND TITLE _____

GUARANTY TO BE IN EFFECT FROM _____

TO _____

The Contractor hereby guarantees that the work specified under the above section of the aforesaid Contract will be free from defects of material and/or workmanship, for the period indicated above.

The Contractor also guarantees that it will promptly repair, restore, rebuild or replace whichever may be deemed necessary by the City, any or all defective material or workmanship of the aforementioned section, that may appear within the guaranty period and any finished work to which damage may occur because of such defects, to the satisfaction of the City and without any cost or expense to the City.

The Contractor hereby agrees to pay to the City the cost of the repairs or replacements should the City make the same because of the failure of the Contractor to do so.

Contractor

By

Subscribed and sworn to before me this
day of _____, year _____

Notary Public



2.8 WASTE DISPOSAL DOCUMENTATION:

- A. Certify and deliver to the Commissioner all documentation including reports, receipts, certificates, records etc. for the collection, handling, storage, classification, testing, transportation, recycling and/or disposal of all Non-Hazardous Construction Waste as required by Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL, and Hazardous Waste as required by other Project Specification Sections. Certify compliance with all applicable governing laws, codes, rules and regulations.

2.9 MISCELLANEOUS RECORD DOCUMENTS:

- A. Refer to other Project Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Prior to Final Acceptance, complete miscellaneous records and place in good order, properly identified and bound or otherwise organized to allow for use and reference.
- B. Submit three (3) copies of each document to the Commissioner or as otherwise directed by the Commissioner.

PART III – EXECUTION

3.1 RECORDING AND MAINTENANCE:

- A. Recording: Maintain one copy of each submittal during the construction period for Contract Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Contract Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to the Contract Record Documents for the Resident Engineer's reference during normal working hours.

END OF SECTION 01 78 39



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Division 01 – DDC STANDARD GENERAL CONDITIONS
MULTIPLE CONTRACT PROJECTS
Issue Date - January 15, 2015

NO TEXT

CONTRACT RECORD DOCUMENTS
01 78 39- 10



SECTION 01 79 00
DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SUB-SECTION 01 79 00

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This Section includes administrative and procedural requirements, when set forth in sections of the Project Specifications, for instructing facility's personnel, including the following:
1. Demonstration of operation of systems, subsystems, and equipment.
 2. Owner's Pre-Acceptance Orientation in operation and maintenance of systems, subsystems, and equipment.
 3. Demonstration and Orientation videotapes.
- B. Each Contractor shall provide the services of equipment manufacturers orientation specialists experienced in the type of equipment to be demonstrated.
- C. Separate Orientation sessions shall be conducted for mechanical operations and maintenance personnel and for electronic and electrical maintenance personnel.
- D. Commissioning: Refer to the Addendum to identify whether this project is to be Commissioned. For Commissioned projects each Contractor shall provide Demonstration and Orientation as described in this section and cooperate with the Commissioning Authority/Agent (CxA) to implement Commissioning requirements as described in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS.

1.3 RELATED SECTIONS: include without limitation the following:

- A. Section 01 10 00 SUMMARY
- B. Section 01 33 00 SUBMITTAL PROCEDURES
- C. Section 01 77 00 CLOSEOUT PROCEDURES
- D. Section 01 78 39 CONTRACT RECORD DOCUMENTS
- E. Section 01 91 13 GENERAL COMMISSIONING REQUIREMENTS
- F. Specific requirements for Demonstration and Orientation indicated in other sections of the Project Specifications

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.



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- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.

1.5 SUBMITTALS:

- A. Instruction Program: Submit three (3) copies of outline of instructional program for Demonstration and Orientation including a schedule of proposed dates, times, length of instruction time, and instructors' names for each instruction module to the Commissioner for approval no less than thirty (30) days prior to the date the proposed instruction is to take place. Include learning objective and outline for each instruction module.
1. At completion of instruction, submit three (3) complete instruction manual(s) and three (3) applicable DVD recording(s) to the Commissioner for the facility's and City's use.
- B. Qualification Data: For facilitator, instructor and Videographer.
- C. Attendance Record: For each instruction module, submit list of participants and length of instruction time.
- D. Evaluations: For each participant and for each orientation module, submit results and documentation of performance-based test.
- E. Submit all final orientation material to the Resident Engineer a minimum of fourteen (14) days prior to the scheduled instruction.
- F. Demonstration and Orientation Recordings:
1. Non-Commissioned Projects:
 - a. Each Contractor shall submit to the Commissioner three (3) copies of Demonstration and Orientation DVD (Digital Video Disk) recordings within seven (7) days of end of each instruction module.
 - b. Identification: On each copy, provide an applied label with the following information:
 - 1) Project Contract I.D. Number
 - 2) Project Contract Name
 - 3) Name of Contractor
 - 4) Name of Design Consultant
 - 5) Name of Construction Manager as applicable
 - 6) Date recorded.
 - 7) Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - 8) Table of Contents including list of systems covered.
 - c. Transcript: Prepared on 8-1/2-by-11-inch paper, punched and bound in heavy-duty, 3-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding DVD recording. Include name of Project and date of recording on each page.
 2. Commissioned Projects:
 - a. Demonstration and Orientation DVD recordings for Commissioned projects will be recorded by each applicable Contractor in accordance with Sub-Section 1.5F and Sub-



Section 3.2B herein. Each Contractor performing Demonstration and Orientation shall cooperate with the CxA in the recording of each Demonstration and Orientation module.

1.6 QUALITY ASSURANCE:

- A. **Facilitator Qualifications:** A firm or individual experienced in instructing or educating maintenance personnel in an orientation program similar in content and extent to that indicated for this Project, and whose work has resulted in instruction or education with a record of successful learning performance.
- B. **Instructor Qualifications:** A factory-authorized service representative, complying with requirements in Section 01 40 00, QUALITY REQUIREMENTS, experienced in operation and maintenance procedures and orientation/instruction.
- C. **Videographer Qualifications:** A professional Videographer who has experience with instruction and construction projects.
- D. **Pre-instruction Conference:** Schedule with the Resident Engineer a conference at Project site to comply with requirements in Section 01 31 00, PROJECT MANAGEMENT AND COORDINATION. Review methods and procedures related to demonstration and orientation instruction including, but not limited to, the following:
 - 1. Inspect and discuss locations and other facilities required for instruction.
 - 2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
 - 3. Review required content of instruction.
 - 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.7 COORDINATION:

- A. Coordinate instruction schedule with the Resident Engineer and facility's operations. Adjust schedule as required to minimize disrupting facility's operations.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of orientation instruction modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by the Commissioner.

PART II – PRODUCTS

2.1 INSTRUCTION PROGRAM:

- A. **Program Structure:** Develop an instruction program that includes individual orientation modules for each system and equipment not part of a system, as specified and required by individual Specification Sections.
- B. **Orientation Modules:** Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:



1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function including auxiliary equipment and systems.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Operations manuals.
 - c. Maintenance manuals.
 - d. Project Record Documents.
 - e. Identification systems.
 - f. Warranties
3. Emergencies: Include the following, as applicable:
 - a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
4. Operations: Include the following, as applicable:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - l. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
5. Adjustments: Include the following:
 - a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
6. Troubleshooting: Include the following:
 - a. Diagnostic instructions.
 - b. Test and inspection procedures.



7. Maintenance: Include the following:
 - a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning
 - e. Procedures for preventive maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.
 - h. Housekeeping practices
8. Repairs: Include the following:
 - a. Diagnosis instructions.
 - b. Repair instructions.
 - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - d. Instructions for identifying parts and components.
 - e. Review of spare parts needed for operation and maintenance.

PART III – EXECUTION

3.1 INSTRUCTION:

- A. Facilitator: Each Contractor performing Demonstration and Orientation shall engage a qualified facilitator to prepare instruction program and instruction modules, to coordinate instructors, and to coordinate between Contractor and the Resident Engineer for the number of participants, instruction times, and location.
- B. Each Contractor shall engage qualified instructors to instruct facility's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
- C. Scheduling: Schedule instruction with the Resident Engineer at mutually agreed times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 1. Schedule orientation instruction with the Resident Engineer with at least fourteen (14) days' advance notice.
- D. Evaluation: At conclusion of each orientation instruction module, assess and document each participant's mastery of module(s) by use of an oral, a written or a demonstration performance-based test.
- E. Cleanup: Collect and remove used and leftover educational materials from project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial orientation use.

3.2 DEMONSTRATION AND ORIENTATION RECORDINGS:

- A. Non-Commissioned projects:
 1. Each Contractor performing Demonstration and Orientation shall engage a qualified commercial Videographer to record demonstration and orientation instruction sessions. Record each orientation instruction module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
 2. At beginning of each orientation instruction module, record each chart containing learning objective and lesson outline.



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3. All recordings must be close captioned.
4. Recording Format: Provide high-quality DVD (Digital Video Disk) format.
5. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of demonstration and orientation instruction. Display continuous running time.
6. Narration: Describe scenes on the recording by audio narration by microphone while recording or by dubbing audio narration off-site after. Include description of items being viewed. Describe vantage point, indicating location, direction (by compass point), and elevation or story of construction.
7. Transcript: Provide a typewritten transcript of the narration. Display images and running time captured from opposite the corresponding narration segment.

B. Commissioned Projects:

Refer to the Addendum to determine if project is to be Commissioned.

1. The Commissioning Authority/ Agent (CxA) under separate contract with the City of New York will assess and comment on the adequacy of the Orientation Instruction sessions by reviewing the Orientation and Instruction program and agenda provided by each Contractor. The provider of the Orientation program will videotape the sessions and provide a copy to the CxA for final review and comments. If necessary, Contractor shall edit DVD recording per CxA comments.

END OF SECTION 01 79 00



SECTION 01 81 13
SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SUB SECTION 01 81 13

PART I - GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

A. **LEED BUILDING - GENERAL REQUIREMENTS:**

The City of New York is committed to implementing good environmental practices and procedures which include achieving a LEED™ Green Building rating. Specific project requirements related to this goal are listed in the applicable paragraphs of this section of the General Conditions. Each Contractor shall ensure that these requirements as defined in the sections below and in related sections of the Contract Documents, are implemented to the fullest extent. Substitutions, or other changes to the work proposed by each Contractor or its Subcontractors, shall not be allowed if such changes compromise the stated LEED BUILDING criteria.

B. This Section includes:

1. Definitions
2. LEED Provisions
3. LEED Building Submittals
4. LEED Building Submittal Requirements
5. LEED Action Plan

1.3 RELATED SECTIONS: Include without limitation the following:

- | | | |
|----|---------------------|--|
| A. | Section 01 74 19 | CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL |
| B. | Section 01 81 13.13 | VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES,
SEALANTS, PAINTS AND COATINGS |
| C. | Section 01 81 19 | INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS |
| D. | Section 01 91 13 | GENERAL COMMISSIONING REQUIREMENTS |

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. **Agrifiber Products:** Products derived from recovered agricultural waste fiber from sources such as cereal straw, sugarcane bagasse, sunflower husk, walnut shells, coconut husks, and agricultural prunings, processed and mixed with resins to produce panels with characteristics similar to composite wood.



- C. Composite Wood: Products composed of wood or plant particles or fibers bonded by a synthetic resin or binder to produce panels such as plywood, particleboard, and medium density fiberboard (MDF). Does not include hardboard, structural panels, glued laminated timber, prefabricated wood I-joists, or finger-jointed lumber.
- D. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.
- E. Forest Stewardship Council (FSC) Certified Wood: Wood-based materials and products certified in accordance with the Forest Stewardship Council's principles and criteria.
- F. LEED: The Leadership in Energy & Environmental Design rating system developed by the United States Green Building Council.
- G. Rapidly Renewable Materials: Materials made from agricultural products that are typically harvested within a ten-year or shorter cycle. Rapidly renewable materials include products made from bamboo, cotton, flax, jute, straw, sunflower seed hulls, vegetable oils, or wool.
- H. Regionally Manufactured Materials: Materials that are manufactured within a radius of 500 miles from the Project location. Manufacturing refers to the final assembly of components into the building product that is installed at the Project site.
- I. Regionally Extracted, Harvested, or Recovered Materials: Materials which are extracted, harvested, or recovered and manufactured within a radius of 500 miles from the Project site.
- J. Recycled Content: The percentage by weight of constituents that have been recovered or otherwise diverted from the solid waste stream, either during the manufacturing process (pre-consumer), or after consumer use (post-consumer).
 - 1. Spills and scraps from the original manufacturing process that are combined with other constituents after a minimal amount of reprocessing for use in further production of the same product are not recycled materials.
 - 2. Discarded materials from one manufacturing process that are used as constituents in another manufacturing process except mechanical and electrical components are pre-consumer recycled materials.
 - 3. "Pre-consumer" may also be referred to as "post-industrial".
- K. Solar Reflectance Index (SRI): A measure of a material's ability to reflect solar heat, as shown by a small temperature rise. It is defined so that a standard black (reflectance 0.05, emittance 0.90) is equal to 0, and a standard white (reflectance 0.80, emittance of 0.90) is equal to 100.
- L. Volatile Organic Compound (VOC): Any compound of carbon (excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate) which vaporizes (becomes a gas) and participates in atmospheric photochemical reactions, as specified in Part 51.00 of Chapter 40 of the U.S. Code of Federal Regulations, at normal room temperatures. For the purposes of this specification, formaldehyde and acetaldehyde are considered to be VOCs.



1.5 LEED PROVISIONS:

- A. Refer to the Addendum for the LEED rating to be achieved for this project. The provisions to achieve this LEED rating are integrated within the project construction documents and specifications. Each Contractor is specifically directed to the "LEED BUILDING Performance Criteria" and "LEED BUILDING Submittals" sections within the contract specification. Additional LEED requirements are met through aspects of the project design, including material and equipment selections, which may not be specifically identified as LEED BUILDING requirements. Compliance with the requirements needed to obtain LEED prerequisites and credits will be used as one criterion to evaluate substitution requests.

1.6 LEED BUILDING SUBMITTALS:

- A. Scope: LEED BUILDING submittals are required for all installed materials included in General Construction work. LEED BUILDING Submittals are only required for field-applied adhesives, sealants, paints and coatings included in Plumbing, Mechanical and Electrical work. Submit all required LEED BUILDING submittals in accordance with Section 01 33 00, SUBMITTAL PROCEDURES.
- B. Applicability: The extent of the LEED BUILDING Submittals varies depending on the specification section. Applicable LEED BUILDING Submittals are listed under the "LEED BUILDING Submittals" heading in each specification section. The detailed requirements for the LEED BUILDING Submittals are defined in Item C below.
- C. Detailed Requirements: Sub-Sections 1.6 C.1 through 1.6 C.3 below defines the information and documents to be provided for each type of LEED BUILDING Submittal as identified in the LEED Submittal Requirements of each specification section:
1. ENVIRONMENTAL BUILDING MATERIALS CERTIFICATION FORM (EBMCF): Information to be supplied for this form (blank sample copy attached at end of this Section to be modified as appropriate to the project) shall include some or all of the following items, as identified in the LEED Submittal Requirements of each specification section:
 - a. Cost breakdowns for the materials included in each Contractor or sub-contractor's scope of work. Cost reporting shall include itemized material costs (excluding each Contractor's labor, equipment, overhead and profit).
 - b. The percentages (by weight) of post-consumer and/or post-industrial recycled content in the supplied product(s).
 1. For each product with recycled content, also indicate the total recycled content value ($1/2 \times \text{pre-consumer percentage} \times \text{product value} + 1 \times \text{post-consumer percentage} \times \text{product value} = \text{total recycled content value}$).
 2. See additional requirements for concrete below.
 - c. Identification (Yes/No) of materials manufactured within 500 miles of the project site AND containing raw materials harvested or extracted within 500 miles of the project site.
 - 1) Indicate the percentage by weight, relative to the total weight of the product, that meets these criteria.
 - 2) Indicate the point of harvest/extraction/recovery of regional raw materials, the point of final assembly of regional manufactured products, and the distance from each point to the project site.
 - d. Volatile Organic Compound (VOC) content of all field-applied adhesives, sealants, paints, and coatings, listed in grams/liter or lbs./gallon, less water.
 - 1) For detailed requirements refer to Section 01 81 13.13 VOC LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS.
 - e. The amount of "Forest Stewardship Council (FSC) Certified" wood products if used in the Project.
 - 1) Record only new FSC-certified wood products. Do not record reclaimed, salvaged, or recycled FSC-certified wood products.



- 2) Reclaimed, salvaged, or recycled FSC-certified wood may be recorded as post-consumer recycled content.
 - f. The amount of Rapidly Renewable materials if used in the Project.
 - 1) Indicate the type of rapidly renewable material used, and the percentage by weight, relative to the total weight of the product, that consists of rapidly renewable material.
 - g. The percentage (by weight), relative to the total weight of cementitious materials, of supplementary cementitious materials or pozzolans such as fly ash used in each concrete mix used in the Project.
 - 1) For each concrete mix, provide a complete breakdown of all components, by weight and by cost.
 - h. Identification (Yes/No) of composite wood or agrifiber products used in the project that are free of added urea-added formaldehyde resins.
 - i. Identification (Yes/No) of flooring products used in the project that have Carpet and Rug Institute (CRI) Green Label or Green Label Plus certification, or Resilient Floor Covering Institute FloorScore certification.
 - 1) Untreated solid wood flooring, and mineral-based flooring products such as tile, masonry, terrazzo, and cut stone that have no organic-based coatings or sealants, are excluded from this requirement.
 - j. The EBMCF shall record the above information only for those materials or products permanently installed in the project. The EBMCF shall record VOC content, composite and agrifiber products, and CRI or FloorScore ratings only for those materials or products permanently installed within the weather barrier of the LEED building.
2. **EBMCF BACK-UP DOCUMENTATION:** These documents are used to validate the information provided on the EBMCF (except cost data). For each material listed on the EBMCF, provide documentation to certify the material's LEED BUILDING attributes, as applicable:
- a. **RECYCLED CONTENT:** Provide published product literature or letter of certification on the manufacturer's letterhead certifying the amounts of post-consumer and/or post-industrial content.
 - b. **REGIONAL MANUFACTURING AND REGIONAL RAW MATERIALS (WITHIN 500 MILES):** Provide published product literature or letter of certification on the manufacturer's letterhead indicating the city/state where the manufacturing plant is located, where each of the raw materials in the product were extracted, harvested or recovered and the distance in miles from the project site.
 - 1) If only some of the raw materials for a particular product or assembly originate within 500 miles of the project site, provide the percentage (by weight) that these materials comprise in the complete product.
 - c. **VOC CONTENT:** Provide Material Safety Data Sheets (MSDS) certifying the Volatile Organic Compound (VOC) content of the adhesive, sealant, paint, or coating products. VOC content is to be reported in grams/liter or lbs./gallon, less water. If the MSDS does not show the product's VOC content, this information must be provided through other published product literature from the manufacturer, or stated in a letter of certification from the product manufacturer on the manufacturer's letterhead.
 - d. **RAPIDLY RENEWABLE MATERIALS:** If used in the project, provide published literature or letter of certification on the manufacturer's letterhead certifying the percentage of each product that is rapidly renewable (by weight).
3. **PRODUCT CUT SHEETS:** Provide product cut sheets with each Contractor's or sub-contractor's stamp, confirming that the submitted products are the products installed in the Project.
4. **CRI GREEN LABEL PLUS CERTIFICATION:** For carpets and carpet cushions, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the products comply with the "Green Label Plus" IAQ testing program of the Carpet and Rug Institute of Dalton, GA.



5. **CERTIFICATION OF COMPOSITE WOOD OR AGRIFIBER RESINS:** For all composite wood, engineered wood and agrifiber products (including plywood, particleboard, and medium density fiberboard), provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the products do not contain added urea-formaldehyde resins.
6. **CERTIFICATION OF COMPOSITE WOOD OR AGRIFIBER LAMINATING ADHESIVES:** For all laminating adhesives used with composite wood, engineered wood and agrifiber products (e.g., adhesives used to laminate wood veneers to an engineered wood substrate), provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the adhesive products do not contain urea-formaldehyde.
7. **FSC-CERTIFIED WOOD:**
 - a. If used in the project, provide chain of custody documents and copies of invoices regarding wood products, including whether or not such wood product is FSC-certified.
 - b. If used in the project, for assemblies, provide the percentage (by cost and by weight) of the assembly that is FSC-certified wood.
 - c. If used in the project, for assemblies, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying the percentage that is FSC-certified wood.
8. **GREEN SEAL COMPLIANCE:** Provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the following product types comply with the VOC limits and chemical component restrictions developed by the Green Seal organization of Washington, DC:
 - a. Interior Architectural Paints and Coatings: refer to Green Seal standard GS-11 (1st edition, May 1993)
 - b. Anti-corrosive and Anti-rust paints: refer to Green Seal standard GC-03 (2nd Edition, January 1997)
 - c. Aerosol Adhesives: refer to Green Seal standard GS-36 (1st edition, October 2000)
9. **HIGH ALBEDO PAVING AND WALKWAY MATERIALS:** For paving and walkway materials made from concrete or brick provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying a minimum Solar Reflectance Index (SRI) value of 29. SRI values shall be calculated according to ASTM E 1980. Reflectance shall be measured according to ASTM E 903, ASTM E 1918, or ASTM C 1549. Emittance shall be measured according to ASTM E 408 or ASTM C 1371.
10. **HIGH ALBEDO ROOFING MATERIALS:** For exposed roofing membranes, pavers, and ballast products, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying the following minimum Solar Reflectance Index (SRI) values:
 - a. 78 for low-sloped roofing applications (slope \leq 2:12)
 - b. 29 for steep-sloped roofing applications (slope $>$ 2:12)

SRI values shall be calculated according to ASTM E 1980. Reflectance shall be measured according to ASTM E 903, ASTM E 1918, or ASTM C 1549. Emittance shall be measured according to ASTM E 408 or ASTM C 1371.

Vegetated roof surfaces are exempt from the SRI criteria.
11. **LOW MERCURY LAMPS:** For all fluorescent, compact fluorescent, and HID lamps installed in the project, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying:
 - a. The mercury content or content range per lamp in milligrams or picograms;
 - b. The design light output per lamp (light at 40% of a lamp's useful life) in lumens; and
 - c. The rated average life of the lamp in hours.



In addition, provide the total number of each lamp type installed in the project.

12. **FLOORSCORE CERTIFICATION:** For all hard surface flooring, including vinyl, linoleum, laminate flooring, wood flooring, ceramic flooring, rubber flooring, and wall base, provide published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying that the products comply with the current FloorScore standard requirements.
13. **CONCRETE:** Provide concrete mix design for each mix, designated by a distinct identifying code or number and signed by a Professional Engineer licensed in the state in which the concrete manufacturer or supplier is located.
14. **INTERIOR LIGHTING FIXTURES:** For each lighting fixture type installed within the building's weather barrier, provide manufacturer's cut sheets indicating the following:
 - a. Fixture power in watts.
 - b. Initial lamp lumens.
 - c. Photometric distribution data.
 - d. Dimming capability, in range of percentages.
15. **EXTERIOR LIGHTING FIXTURES:** For each lighting fixture type installed on site, provide manufacturer's cut sheets indicating the following:
 - a. Fixture power in watts.
 - b. Initial lamp lumens.
 - c. Photometric distribution data.
 - d. Range of field adjustability, if any.
 - e. Warranty of suitability for exterior use.
16. **ALTERNATIVE TRANSPORTATION:** Provide manufacturer's cut sheets and/or shop drawings for the following items installed on site:
 - a. Bike racks, including total number of bicycle slots provided.
 - b. Signage indicating parking spaces reserved for electric or low-emitting vehicles and for carpools/vanpools, including total number of signs.
17. **WATER CONSERVING FIXTURES:** For all water consuming plumbing fixtures and fittings, provide manufacturer's cut sheets showing maximum flow rates and/or flush rates.
18. **ENERGY SAVING APPLIANCES:** Provide manufacturer's cut sheets and published product literature or letter from the manufacturer (on the manufacturer's letterhead) verifying the product's rating under the U.S. EPA/DOE Energy Star program, for all of the following:
 - a. Appliances (i.e., refrigerators, dishwashers, microwave ovens, televisions, clothes washers, clothes dryers, chilled water dispensers).
 - b. Office equipment (i.e., copy machines, fax machines, plotters/printers, scanners, binding and publishing equipment).
 - c. Electronics (i.e., servers, desktop computers, computer monitor displays, laptop computers, network equipment).
 - d. Commercial food service equipment
19. **GLAZING:** For glazing in any windows, doors, storefront and window wall systems, curtainwall systems, skylights, and partitions, provide manufacturer's cut sheets indicating the following:
 - a. Glazed area.
 - b. Visible light transmittance.
 - c. Solar heat gain coefficient.
 - d. Fenestration assembly u-factor.
20. **VENTILATION:** Provide manufacturer's cut sheets for the following:
 - a. Carbon dioxide monitoring systems, if any, installed to measure outside air delivery.
 - b. Air filters: for detailed requirements refer to Section 01 81 19 INDOOR AIR QUALITY REQUIREMENTS.
21. **REFRIGERATION:** For all refrigeration equipment, provide manufacturer's cut sheets indicating the following:
 - a. Equipment type.



- b. Equipment life. Default values specified by the 2007 ASHRAE Applications Handbook will be used unless otherwise demonstrated by the manufacturer's guarantee and an equivalent long-term service contract.
- c. Refrigerant type.
- d. Refrigerant charge in pounds of refrigerant per ton of gross cooling capacity.
- e. Tested refrigerant leakage rate, in percent per year. A default rate of 2% will be used unless otherwise demonstrated by test data.
- f. Tested end-of-life refrigerant loss, in percent. A default rate of 10% will be used unless otherwise demonstrated by test data.

1.7 LEED BUILDING SUBMITTAL REQUIREMENTS:

- A. The LEED BUILDING submittal information shall be assembled into one package per each Contractor's specification section(s) (or per subcontractor), and submitted in accordance with Section 01 33 00, SUBMITTAL PROCEDURES. Incomplete or inaccurate LEED BUILDING submittals may be used as the basis for rejecting the submittals of products or assemblies.

1.8 LEED ACTION PLANS:

- A. Construction Waste Management Plan- Refer to Section 01 74 19, Construction Waste Management and Disposal for detailed submittal requirements.
- B. Construction IAQ Management Plan- Refer to Section 01 81 19, Indoor Air Quality Requirements for LEED Buildings, for detailed submittal requirements.
- C. Erosion and Sedimentation Control Plan (ESC Plan):
 1. The Plan shall be in accordance with the New York State Department of Environmental Conservation (NYSDEC) or the 2003 EPA Construction General Permit, whichever is more stringent.
 2. The Plan shall be submitted in accordance with Section 01 33 00, SUBMITTAL PROCEDURES.
 3. Detailed requirements: ESC Plan
 - i. Include the Stormwater Pollution Prevention Plan, if required.
 - ii. Identify the party responsible for Plan monitoring and documentation. The party must be regularly on site.
 - iii. Describe all site work that will be implemented on the project.
 - iv. Provide site plan with location of ESC measures, including, but not limited to, stormwater quantity controls, stormwater quality controls, stabilized construction entrances, washdown areas, and inlet/catch basin protection.
 - v. Describe the inspection and maintenance of the ESC measures. Provide a construction schedule indicating weekly site review.
 - vi. Describe reporting and documentation measures.
 4. Detailed requirements: ESC Measures
 5. Submittal requirements: ESC Tracking Log
 - a. Note date of major rain events, describe damage, describe any repairs or maintenance performed, and note responsible party.
 - b. Note date and findings of weekly site review, describe any repairs or maintenance performed, and note responsible party.
 - c. Submit monthly.
 6. Implementation
 - a. The GC Contractor shall implement the ESC Plan, coordinate the Plan with all affected trades, and designate one individual as the Erosion and Sedimentation Control



- Representative, who will be responsible for communicating the progress of the Plan with the Commissioner on a regular basis, and for assembling the required LEED documentation.
- b. Each Contractor shall be responsible for the provision, maintenance, and repair of all ESC measures.
 - c. Demonstration. Each Contractor shall provide on-site instruction of proper construction practices required to prevent erosion and sedimentation.
 - d. Meetings. Urgent or ongoing ESC issues shall be discussed at weekly on-site job meetings.

1.9 QUALITY ASSURANCE:

- A. Each Contractor shall implement all LEED Action Plans, coordinate the Plans and LEED Building Submittals with all affected trades, and designate one individual as the Sustainable Construction Representative at no additional cost to the City of New York, who will be responsible for communicating the progress of LEED activities with the Commissioner on a regular basis, and for assembling the required LEED documentation.
- B. Responsibilities of Contractor's Subcontractors: Each Contractor shall be responsible for his/her subcontractors complying with the LEED Action Plans and for providing required LEED documentation as required for the project.
- C. Distribution and Compilation: The GC Contractor shall be responsible for distributing the EBMCF and any other forms or templates required for each Contractor and his/ her subcontractors to record LEED documentation. Each Contractor shall also be responsible for collecting and compiling EBMCF information into packages as described in Section 01 33 00 SUBMITTAL PROCEDURES.
- D. Meetings: Sustainable design and construction issues shall be discussed at the following meetings:
 1. Demolition kick-off meeting
 2. Construction kick-off meeting
 3. Construction kick-off meeting for LEED (independent meeting)
 4. Weekly job-site progress and coordination meetings
- E. Closeout meeting

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 81 13

NO TEXT



SECTION 01 81 13.13

VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS FOR LEED BUILDINGS

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 81 13.13

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

- A. This Section includes requirements for volatile organic compound (VOC) content in adhesives, sealants, paints and coatings used for the project.
- B. All sections in the Project Specifications with adhesives, sealant or sealant primer applications, paints and coatings shall follow all requirements of this section. In the event of any conflict or inconsistency between this section and the Specifications regarding adhesives, sealant or sealant applications, paints and coatings, the requirements set forth in this Section shall prevail.
- C. This Section includes:
 - 1. General Requirements
 - 2. References
 - 3. VOC Requirements for Interior Adhesives
 - 4. VOC Requirements for Interior Sealants
 - 5. VOC requirements for Interior Paints
 - 6. VOC requirements for Interior Coatings
 - 7. Submittals

1.3 RELATED SECTIONS: Include without limitation the following:

- A. Section 01 10 00 SUMMARY
- B. Section 01 31 00 PROJECT MANAGEMENT AND COORDINATION
- C. Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION
- D. Section 01 33 00 SUBMITTAL PROCEDURES
- E. Section 01 73 00 EXECUTION
- F. Section 01 77 00 CLOSEOUT PROCEDURES
- G. Section 01 78 39 CONTRACT RECORD DOCUMENTS
- H. Section 01 81 13 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS
- I. Section 01 81 19 INDOOR AIR QUALITY FOR LEED BUILDINGS

1.4 DEFINITIONS:

- A. **ADHESIVE:** Any substance used to bond one surface to another by attachment. Includes adhesive primers and adhesive bonding primers.
 - 1. **Aerosol Adhesive:** Any adhesive packaged as an aerosol with a spray mechanism permanently housed in a non-refillable can designed for hand-held application without the need for ancillary equipment.



- B. **CARCINOGEN:** A chemical listed as a known, probable, reasonably anticipated, or possible human carcinogen by the International Agency for Research on Cancer (IARC) (Groups 1, 2A, and 2B), the National Toxicology Program (NTP) (Groups 1 and 2), the U.S. Environmental Protection Agency (EPA) Integrated Risk Information System (IRIS) (weight-of-evidence classifications A, B1, B2, and C, carcinogenic, likely to be carcinogenic, and suggestive evidence of carcinogenicity or carcinogen potential), or the Occupational Safety and Health Administration (OSHA).
- C. **CLEAR WOOD FINISH:** Clear/semi-transparent coating applied to wood substrates to provide a transparent or translucent solid film.
 - 1. **Lacquer:** Clear/semi-transparent coating formulated with cellulosic or synthetic resins to dry by evaporation without chemical reaction and provide a solid, protective film.
 - 2. **Sanding Sealer:** A sanding sealer that also meets the definition of a lacquer.
 - 3. **Varnish:** Clear/semi-transparent coating, excluding lacquers and shellacs, formulated to dry by chemical reaction on exposure to air. May contain small amounts of pigment.
- D. **COATING:** Liquid, liquefiable, or mastic composition that is converted to a solid adherent film after application to a substrate as a thin layer; and is used for decorating, protecting, identifying or to serve some functional purpose such as the filling or concealing of surface irregularities or the modification of light and heat radiation characteristics; and is intended for on-site application to interior or exterior surfaces of buildings. Does not include stains, clear finishes, recycled latex paint, specialty (industrial, marine or automotive) coatings or paint sold in aerosol cans.
- E. **FLOOR COATING:** Opaque coating applied to flooring. Excludes industrial maintenance coatings.
- F. **HAZARDOUS AIR POLLUTANT:** Any compound listed by the U.S. EPA in the Clean Air Act Section 112(b)(1) as a hazardous air pollutant.
- G. **MUTAGEN:** A chemical that meets the criteria for category 1, chemicals known to induce heritable mutations or to be regarded as if they induce heritable mutations in the germ cells of humans, under the Harmonized System for the Classification of Chemicals Which Cause Mutations in Germ Cells (United Nations Economic Commission for Europe, Globally Harmonized System of Classification and Labeling of Chemicals).
- H. **OZONE-DEPLETING COMPOUNDS:** A compound with an ozone-depletion potential greater than 0.1 (CFC 11=1) according to the U.S. EPA list of Class I and Class II Ozone-Depleting Substances.
- I. **PAINT:** A pigmented coating. For the purposes of this specification, paint primers are considered to be paints.
 - 1. **Flat Coating or Paint:** Has a gloss of less than 15 (using an 85-degree meter) or less than 5 (using a 60-degree meter).
 - 2. **Non-Flat Coating or Paint:** Has a gloss of greater than or equal to 15 (using an 85-degree meter) or greater than or equal to 5 (using a 60-degree meter).
 - 3. **Non-Flat High-Gloss Coating or Paint:** Has a gloss of greater than or equal to 70 (using a 60-degree meter).
 - 4. **Anti-Corrosive / Rust Preventative Paint:** Coating formulated and recommended for use in preventing the corrosion of ferrous metal substrates.
- J. **PRIMER:** Coating that is formulated and recommended for one or more of the following purposes: to provide a firm bond between the substrate and a subsequent coating; to prevent a subsequent coating from being absorbed into the substrate; to prevent harm to a subsequent coating from materials in the substrate; or to provide a smooth surface for application of a subsequent coating.
- K. **REPRODUCTIVE TOXIN:** A chemical listed as a reproductive toxin (including developmental, female, and male toxins) by the State of California under the Safe Drinking Water and Toxic Enforcement Act of 1986 (California Code of Regulations, Title 22, Division 2, Subdivision 1, Chapter 3, Sections 1200, et. Seq.).
- L. **SANDING SEALER:** Clear/semi-transparent coating formulated to seal bare wood. Can be abraded to create a smooth surface for subsequent coatings. Does not include sanding sealers that are lacquers (see Clear Wood Finish above).



- M. **SEALANT:** Any material with adhesive properties, formulated primarily to fill, seal, or waterproof gaps or joints between surfaces. Includes sealant primers and caulks.
- N. **SHELLAC:** Clear or pigmented coating formulated solely with the resinous secretions of the lac beetle, thinned with alcohol and formulated to dry by evaporation without chemical reaction. Excludes floor applications.
- O. **STAIN:** Clear semi-transparent/opaque coating formulated to change the color but not conceal the grain pattern or texture of the substrate.
- P. **VOLATILE AROMATIC COMPOUND:** Any hydrocarbon compound containing one or more 6-carbon benzene rings, and having an initial boiling point less than or equal to 280 degrees Celsius measured at standard conditions of temperature and pressure.
- Q. **VOLATILE ORGANIC COMPOUND:** Any compound of carbon (excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate) which vaporizes (becomes a gas) and participates in atmospheric photochemical reactions, as specified in Part 51.00 of Chapter 40 of the U.S. Code of Federal Regulations, at normal room temperatures. For the purposes of this specification, formaldehyde and acetaldehyde are considered to be VOCs.
- R. **WATERPROOFING SEALER:** A coating that prevents the penetration of water into porous substrates.

1.5 GENERAL REQUIREMENTS:

- A. The City of New York is committed to implementing good environmental practices and procedures which include achieving a LEED Green building rating. Specific project requirements related to this goal which may impact this area of work are listed in the applicable paragraphs of this specification section. Each Contractor shall ensure that the requirements as defined in the sections below and in related sections of the Contract Documents, are implemented to the fullest extent. Substitutions, or other changes to the work proposed by each Contractor or their Subcontractors, shall not be allowed if such changes compromise the stated environmental goals.

1.6 REFERENCES:

- A. Rule 1168 – "Adhesive and Sealant Applications", amended 7 January 2005): South Coast Air Quality Management District (SCAQMD), State of California, www.aqmd.gov
- B. Rule 1113 - "Architectural Coatings", amended 9 July 2004: South Coast Air Quality Management District (SCAQMD), State of California, www.aqmd.gov
- C. Green Seal Standard GS-11- "Paints", of Green Seal, Inc., Washington, DC, www.greenseal.org
- D. Green Seal Standard GC-03- "Anti-Corrosive Paints", of Green Seal, Inc., Washington, DC, www.greenseal.org

1.7 VOC REQUIREMENTS FOR INTERIOR ADHESIVES, SEALANTS, PAINTS AND COATINGS:

- A. **GENERAL:** Unless otherwise specified herein, the VOC content of all interior adhesives, sealants, paints and coatings (herein referred to as "products") shall not be in excess of **250 grams per liter**.
- B. No product shall contain any ingredients that are carcinogens, mutagens, reproductive toxins, persistent bioaccumulative compounds, hazardous air pollutants, or ozone-depleting compounds. An exception shall be made for titanium dioxide and, for products that are pre-tinted by the manufacturer, carbon black, which shall be less than or equal to 1% by weight of the product.
- C. No product shall contain the following:
 - 1. methylene chloride
 - 2. 1,1,1-trichloroethane
 - 3. benzene



4. toluene
5. ethylbenzene
6. vinyl chloride
7. naphthalene
8. 1,2-dichlorobenzene
9. di (2-ethylhexyl) phthalate
10. butyl benzyl phthalate
11. di-n-butyl phthalate
12. di-n-octyl phthalate
13. diethyl phthalate
14. dimethyl phthalate
15. isophorone
16. antimony
17. cadmium
18. hexavalent chromium
19. lead
20. mercury
21. formaldehyde
22. methyl ethyl ketone
23. methyl isobutyl ketone
24. acrolein
25. acrylonitrile

D. No product shall contain more than 1.0% by weight of sum total of volatile aromatic compounds.

1.8 VOC REQUIREMENTS FOR INTERIOR ADHESIVES:

- A. The volatile organic compound (VOC) content of adhesives, adhesive bonding primers, or adhesive primers used in this project shall not exceed the limits defined in Rule 1168 – "Adhesive and Sealant Applications" of the South Coast Air Quality Management District (SCAQMD), of the State of California.
- B. The VOC limits defined by SCAQMD are as follows. All VOC limits are defined in grams per liter, less water and less exempt compounds.
- C. For specified building construction related applications, the allowable VOC content is as follows:

a. Architectural Applications:

i. Indoor carpet adhesive	50
ii. Carpet pad adhesive	50
iii. Wood flooring adhesive	100
iv. Rubber floor adhesive	60
v. Subfloor adhesive	50
vi. Ceramic tile adhesive	65
vii. VCT and asphalt tile adhesive	50
viii. Drywall and panel adhesive	50
ix. Cove base adhesive	50
x. Multipurpose construction adhesive	70
xi. Structural glazing adhesive	100

b. Specialty Applications:

a. PVC welding	510
b. CPVC welding	490



c.	ABS welding	325
d.	Plastic cement welding	250
e.	Adhesive primer for plastic	550
f.	Contact Adhesive	80
g.	Special Purpose Contact Adhesive	250
h.	Structural Wood Member Adhesive	140
i.	Sheet Applied Rubber Lining Operations	850
j.	Top and Trim Adhesive	250

c. Substrate Specific Applications:

a.	Metal to metal	30
b.	Plastic foams	50
c.	Porous material (except wood)	50
d.	Wood	30
e.	Fiberglass	80

d. Aerosol Adhesives:

a.	General purpose mist spray	65% VOC's by weight
b.	General purpose web spray	55% VOC's by weight
c.	Special purpose aerosol adhesives (all types)	70% VOC's by weight

1.9 VOC REQUIREMENTS FOR INTERIOR SEALANTS:

A. The volatile organic compound (VOC) content of sealants, or sealant primers used in this project shall not exceed the limits defined in Rule 1168 – "Adhesive and Sealant Applications" of the South Coast Air Quality Management District (SCAQMD), of the State of California.

B. The VOC limits defined by SCAQMD are as follows. All VOC limits are defined in grams per liter, less water and less exempt compounds.

1 Sealants:

a.	Architectural	250
b.	Non-membrane roof	300
c.	Roadway	250
d.	Single-ply roof membrane	450
e.	Other	420

2 Sealant Primer:

a.	Architectural – Nonporous	250
b.	Architectural – Porous	775
c.	Other	750

1.10 VOC REQUIREMENTS FOR INTERIOR PAINTS:

A. Paints and Primers: Paints and primers used in non-specialized interior applications (i.e., for wallboard, plaster, wood, metal doors and frames, etc.) shall meet the VOC limitations of the Green Seal Paint Standard GS-11, of Green Seal, Inc., Washington, DC. Product-specific environmental requirements are as follows:

1. Volatile Organic Compounds:

a. The VOC concentrations (in grams per liter) of the product shall not exceed those listed below as determined by U. S. Environmental Protection Agency (EPA) Reference Test Method 24.



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Interior Paints and Primers:

Non-flat: 150 g/l

Flat: 50 g/l

The calculation of VOC shall exclude water and tinting color added at the point of sale.

- B. Anti-Corrosive and Anti-Rust Paints: Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates shall meet the VOC limitations of the Green Seal Paint Standard GC-03, of Green Seal, Inc., Washington, DC. Product-specific environmental requirements are as follows:

- 1. Volatile Organic Compounds:

- a. The VOC concentrations (in grams per liter) of the product shall not exceed those listed below as determined by U. S. Environmental Protection Agency (EPA) Reference Test Method 24.

Anti-Corrosive and Anti-Rust Paints: 250 g/l

The calculation of VOC shall exclude water and tinting color added at the point of sale.

1.11 VOC REQUIREMENTS FOR INTERIOR COATINGS:

- A. Clear wood finishes, floor coatings, stains, sealers, and shellacs applied to the interior shall meet the VOC limitations defined in Rule 1113, "Architectural Coatings" of SCAQMD, of the State of California. The VOC limits defined by SCAQMD, based on 7/9/04 amendments, are as follows. VOC limits are defined in grams per liter, less water and less exempt compounds.

- 1. Clear Wood Finishes:

a. Varnish	350
b. Sanding Sealers	350
c. Lacquer	550

- 2. Shellac:

a. Clear	730
b. Pigmented	550

- 3. Stains 250

- 4. Floor Coatings 100

- 5. Waterproofing Sealers 250

- 6. Sanding Sealers 275

- 7. Other Sealers 200

The calculation of VOC shall exclude water and tinting color added at the point of sale.

1.12 SUBMITTALS:

- A. Each Contractor shall submit Material Safety Data Sheets, for all applicable products in accordance with Section 01 33 00, SUBMITTAL PROCEDURES. Applicable products include, but are not limited to adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted. (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).
- B. Submit Environmental Building Materials Certification Form (EBMCF): As referenced in Section 01 81 13, Sustainable Design Requirements for LEED Buildings, for each field-applied adhesive, sealant, paint, and coating product, provide the VOC requirement, as provided in this Specification, for the relevant material category indicated on the documentation noted above.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 81 13.13



**SECTION 01 81 19
INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS**

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 81 19

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 CONSTRUCTION IAQ MANAGEMENT GOALS FOR THE PROJECT:

- A. The City of New York has established that this Project shall minimize the detrimental impacts on Indoor Air Quality (IAQ) resulting from construction activities. Factors that contaminate indoor air, such as dust entering HVAC systems and ductwork, improper storage of materials on-site, poor housekeeping, shall be minimized.

1.3 RELATED SECTIONS:

- A. All sections of the Specifications related to interior construction, MEP systems, and items affecting indoor air quality.
- B. Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS.
- C. Section 01 81 13.13, VOLATILE ORGANIC COMPOUND (VOC) LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS.
- D. Division 9 (of the Specifications): Finishes.

1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.
- C. Volatile Organic Compounds (VOC's): Chemical compounds common in and emitted by many building products, including solvents in paints, coatings, adhesives and sealants, wood preservatives, composite wood binder, and foam insulations. Not all VOC's are harmful, but many of those contained within building products contribute to the formation of smog and may irritate building occupants by their smell and/or health impact.
- D. Materials that act as "sinks" for VOC contamination: Absorptive materials, typically dry and soft materials (such as textiles, carpeting, acoustical ceiling tiles and gypsum board) that readily absorb VOC's emitted by "source" materials and release them over a prolonged period of time.



- E. Materials that act as "sources" for VOC contamination: Products with high VOC contents that emit VOC's either rapidly during application and curing (typically "wet" products, such as paints, sealants, adhesives, caulks and sealers) or over a prolonged period (typically "dry" products such as flooring coverings with plasticizers and engineered wood with formaldehyde).

1.5 REFERENCES, RESOURCES:

- A. "IAQ Guidelines for Occupied Buildings Under Construction", First Edition, November 1995, The Sheet Metal and Air Conditioner Contractors National Association (SMACNA). (703) 803-2980, www.smacna.org.
- B. ANSI/ASHRAE 52.2-1999, "Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size", www.ashrae.org

1.6 LEED BUILDING GENERAL REQUIREMENTS:

- A. Implement practices and procedures as necessary to meet the project's environmental performance goals as set forth in the specific requirements of this section. Specific project goals that may impact this area of work include: use of recycled-content materials; use of low-emitting materials; construction waste recycling; and the implementation of a construction indoor air quality management plan. Ensure that the requirements related to these goals, as defined in this Section, are implemented to the fullest extent. Substitutions or other changes to the work shall not be allowed if such changes compromise the stated LEED BUILDING Performance Criteria.

1.7 CONSTRUCTION IAQ MANAGEMENT PLAN :

- A. The GC Contractor shall prepare and implement a Construction IAQ Management Plan in coordination with each Contractor and submit the IAQ Management Plan to the Commissioner for approval in accordance with Section 01 33 00, SUBMITTAL PROCEDURE. The Construction IAQ Management Plan shall meet the following criteria:
1. Construction activities shall be planned to meet or exceed the minimum requirements of the Sheet Metal and Air Conditioning National Contractors' Association (SMACNA) "IAQ Guidelines for Occupied Buildings under Construction", Second Edition, 2007 (or latest).
 2. Absorptive materials shall be protected from moisture damage when stored on-site and after installation.
 3. If air handlers are to be used during construction, filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 must be used at each return air grill, as determined by ASHRAE 52.2-1999.
 4. Filtration media shall be replaced immediately prior to occupancy. Filtration media shall have a Minimum Efficiency Reporting Value (MERV) of 13 as determined by ASHRAE 52.2-1999 if the project is pursuing Indoor Air Quality Credit 5: Indoor Chemical Pollutant Source Control.
 5. A "Sequence of Finish Installation Plan" shall be developed, highlighting measures to reduce the absorption of VOCs by materials that act as "sinks".
 6. Upon approval of the Plan by the Commissioner, it shall be implemented through the duration of the construction process, and documented in accordance with the Submittal Requirements of Sub-Section 1.08 herein.



- B. Further description of the Construction IAQ Management Plan requirements is as follows:
1. SMACNA Guidelines: Chapter 3 of the referenced "IAQ Guidelines for Occupied Buildings Under Construction", outline IAQ measures in five categories as listed below. The Construction IAQ Management Plan shall be organized in accordance with the SMACNA format, and shall address measures to be implemented in each of the five categories (including subsections). All subsections shall be listed in the Plan; items that are not applicable for this project should be listed as such.
 - a. HVAC Protection
 - 1) Protect air handling and distribution equipment and air supply and return ducting during construction.
 - 2) All ductwork arriving on site will be sealed with plastic sheeting and stored on pallets or dunnage until installed.
 - 3) Cover and protect all exposed air inlets and outlets, openings, grilles, ducts, plenums, etc. to prevent water, moisture, dust and other contaminant intrusion.
 - 4) Apply protection immediately after ducting.
 - 5) Protect ducting runs at the end of day's work.
 - 6) Inspect temporary filtration weekly and replace as required to maintain the proper ventilation rates in the building.
 - b. Source Control
 - 1) Protect stored on-site or installed absorptive or porous materials.
 - 2) Do not use wet or damaged porous materials in the building.
 - 3) Recover, isolate, and ventilate containers housing toxic materials and materials with VOC levels above the limits for interior adhesives, sealants, paints, and coatings described in these Specifications.
 - 4) Exhaust fumes from idling vehicles and gasoline fueled tools through use of funnels or temporary piping.
 - 5) Containers housing toxic materials and materials with VOC levels above the limits for interior adhesives, sealants, paints, and coatings described in these Specifications, shall be closed when not in use.
 - c. Pathway Interruption
 - 1) Depressurize work areas to contain dust and odors.
 - 2) Pressurize occupied spaces to prevent intrusion of dust and odors.
 - 3) Erect barriers to contain construction areas.
 - 4) Relocate pollutant sources.
 - 5) Temporarily seal the building and provide 100% outside air for ventilation.
 - d. Housekeeping
 - 1) Store materials on elevated platforms under cover, in a designated dry, clean location, prior to unpacking for installation.
 - 2) If materials are not stored in an enclosed location, cover tops and sides of material with waterproof sheeting, securely tied.
 - 3) Institute cleaning activities to remove contaminants from the building prior to occupancy. Clean all coils, air filters, and ductwork prior to performing testing, adjusting, and balancing of HVAC systems.
 - 4) Sweep the work area on a daily basis. Use an efficient and effective dust collecting method such as damp cloth, wet mop, or vacuum with particulate filters. Activities which produce high levels of dust shall be cleaned up immediately upon completion.
 - 5) Spills or excess applications of products containing solvents, or with VOC levels above the limits for interior adhesives, sealants, paints, and coatings described in these Specifications, must be removed immediately.
 - 6) Dust all walls prior to application of finishes.
 - 7) Vacuum all stud tracks prior to application of insulation.
 - 8) Materials which become contaminated through direct exposure to moisture from precipitation, plumbing leaks, or condensation shall be replaced by the Contractor.



- e. Scheduling
- 1) Phase construction such that absorptive materials are installed only in areas that are weathertight.
 - 2) Schedule activities that utilize "sources" of VOC contamination to take place prior to installing high absorbent materials that will act as "sinks" for contaminants.
 - 3) Review of the appropriate components of the Construction IAQ Management Plan shall be a regular action topic at weekly site coordination meetings. Implementation of the Plan shall be documented in the meeting minutes.
2. Protection of Materials from Moisture Damage: As part of the "Housekeeping" section of the Construction IAQ Management Plan, measures to prevent installed materials or material stored on-site from moisture damage shall be described. This section should also describe measures to be taken if moisture damage does occur to absorptive materials during the course of construction.
3. Replacement of Filtration Media: Under the "HVAC Protection" section of the Construction IAQ Management Plan, a description of the filtration media in all ventilation equipment shall be provided. The description shall include replacement criteria for filtration media during construction, and confirmation of filtration media replacement for all equipment immediately prior to occupancy.
4. Sequence of Finish Installation for Materials: Where feasible, absorptive materials shall be installed after the installation of materials or finishes which have high short-term emissions of VOC's, formaldehyde, particulates, or other air-borne compounds. Absorptive materials include, but are not limited to: carpets; acoustical ceiling panels; fabric wall coverings; insulations (exposed to the airstream); upholstered furnishings; and other woven, fibrous or porous materials. Materials with high short-term emissions include, but are not limited to: adhesives, sealants and glazing compounds (specifically those with petrochemical vehicles or carriers); paints, wood preservatives and finishes; control and/or expansion joint fillers; hard finishes requiring adhesive installation; gypsum board (with associated finish processes and products); and composite or engineered wood products with formaldehyde binders.
5. Develop and implement an Indoor Air Quality (IAQ) Management Plan for the pre-occupancy phase as follows:

OPTION 1 — Flush-Out

• After construction ends, prior to occupancy and with all interior finishes installed, perform a building flush-out by supplying a total air volume of 14,000 cu.ft. of outdoor air per sq.ft. of floor area while maintaining an internal temperature of at least 60 degrees F and relative humidity no higher than 60%.

OR

• If occupancy is desired prior to completion of the flush-out, the space may be occupied following delivery of a minimum of 3,500 cu.ft. of outdoor air per sq.ft. of floor area to the space. Once a space is occupied, it shall be ventilated at a minimum rate of 0.30 cfm/sq.ft. of outside air or the design minimum outside air rate determined in EQ Prerequisite 1, whichever is greater. During each day of the flush-out period, ventilation shall begin a minimum of three hours prior to occupancy and continue during occupancy. These conditions shall be maintained until a total of 14,000 cu.ft./sq.ft. of outside air has been delivered to the space.

OR

OPTION 2 — Air Testing

• Conduct baseline IAQ testing, after construction ends and prior to occupancy, using testing protocols consistent with the United States Environmental Protection Agency Compendium of



Methods for the Determination of Air Pollutants in Indoor Air and as additionally detailed in the LEED-NC Reference Guide.

- Demonstrate that the contaminant maximum concentrations listed below are not exceeded.

CONTAMINANT	MAXIMUM CONCENTRATION
Formaldehyde	27 parts per billion
Particulates (PM10)	50 micrograms per cubic meter
Total Volatile Organic Compounds (TVOC)	500 micrograms per cubic meter
* 4-Phenylcyclohexene (4-PCH)	6.5 micrograms per cubic meter
Carbon Monoxide (CO)	9 part per million and no greater than 2 parts per million above outdoor levels
* This test is only required if carpets and fabrics with styrene butadiene rubber (SBR) latex backing material are installed as part of the base building systems.	

- For each sampling point where the maximum concentration limits are exceeded, conduct additional flush-out with outside air and retest the specific parameter(s) exceeded to indicate the requirements are achieved. Repeat procedure until all requirements have been met. When retesting non-complying building areas, take samples from the same locations as in the first test.

- The air sample testing shall be conducted as follows:

- All measurements shall be conducted prior to occupancy, but during normal occupied hours and with the building ventilation system starting at the normal daily start time and operated at the minimum outside air flow rate for the occupied mode throughout the duration of the air testing.
 - The building shall have all interior finishes installed, including but not limited to millwork, doors, paint, carpet and acoustic tiles. Non-fixed furnishings such as workstations and partitions are encouraged, but not required, to be in place for the testing.
 - The number of sampling locations will vary depending upon the size of the building and number of ventilation systems. For each portion of the building served by a separate ventilation system, the number of sampling points shall not be less than one per 25,000 sq.ft., or for each contiguous floor area, whichever is larger, and include areas with the least ventilation and greatest presumed source strength.
 - Air samples shall be collected between 3 feet and 6 feet from the floor to represent the breathing zone of occupants, and over a minimum 4-hour period.
6. Implementation and Coordination: implement the Construction IAQ Management Plan, and coordinate the Plan with all affected trades. Each Contractor shall designate one individual as the Construction IAQ Representative at no additional cost to the City of New York, who will be responsible for communicating the progress of the Plan with the Commissioner on a regular basis, and for assembling the required LEED documentation. Include provisions in the Construction IAQ Management Plan for addressing conditions in the field that do not adhere to the Plan, including provisions to implement a stop work order, or to rectify non-compliant conditions.
- Distribution: The GC Contractor shall distribute copies of the Construction IAQ Management Plan in accordance with Section 01 33 00, SUBMITTAL PROCEDURES.
 - Instruction: The GC Contractor shall provide on-site instruction of appropriate site management to each Contractor.



- c. Monitoring: The Construction IAQ Representative shall monitor the implementation of the Construction IAQ Management Plan.

1.8 SUBMITTALS:

Submit the following LEED-required records and documents in accordance with Section 01 33 00, SUBMITTAL PROCEDURES and Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS.

- A. A copy of the Construction IAQ Management Plan as defined in Sub-Section 1.7 herein.
- B. Product cut-sheets for all filtration media used during construction and installed immediately prior to occupancy, with MERV values highlighted. Cut sheets shall be submitted with each Contractor's or Subcontractor's 'approved' stamp as confirmation that the products are the products installed on the project.
- C. Provide the Commissioner with a minimum of 18 photographs as required under the provision for Special Photographs, in accordance with Section 01 32 33, PHOTOGRAPHIC DOCUMENTATION, comprised of at least six photographs taken on three different occasions during construction. The photographs shall document the implementation of the Construction IAQ Management Plan throughout the course of the project construction. Examples include photographs of ductwork sealing and protection, temporary ventilation measures, and conditions of on-site materials storage (to prevent moisture damage). Photographs shall include integral date stamping, and shall be submitted with brief descriptions of the Construction IAQ Management Plan measure documented, or be referenced to project meeting minutes or similar project documents which reference to the Construction IAQ Management Plan measure documented.
- D. A copy of the project's TAQ Testing report if applicable.

1.9 QUALITY ASSURANCE:

- A. The GC Contractor shall be responsible for preparing and implementing the Construction IAQ Management Plan and shall coordinate and incorporate the work of each Contractor in the IAQ Management Plan.
- B. Responsibility of other Contractors: Each Contractor for this project shall be responsible to cooperate with the GC Contractor in the preparation and implementation of the Construction IAQ Management Plan.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 81 19



SECTION 01 91 13
GENERAL COMMISSIONING REQUIREMENTS

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 91 13

PART I – GENERAL

1.1 RELATED DOCUMENTS:

- A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].
- B. OPR and BoD documentation are included by reference for information only.
- C. The Commissioning Plan, prepared by the Commissioning Agent (CxA) under separate contract with the City of New York, contains requirements that apply to this section.

1.2 SUMMARY:

- A. This Section includes general requirements that apply to implementation of Commissioning without regard to systems, subsystems, and equipment being commissioned.
- B. This Section includes:
 - 1. Definitions
 - 2. Commissioning Team
 - 3. City's Responsibilities
 - 4. Each Contractor's Responsibilities
 - 5. Commissioning Authority's/Agent's (CxA) Responsibilities
 - 6. Commissioning Documentation
 - 7. Submittals
 - 8. Coordination

1.3 RELATED SECTIONS: Include without limitation the following:

- A. "HVAC Commissioning Requirements" indicated in other sections of the project specifications for specific requirements for commissioning HVAC systems.
- B. This project will be commissioned by an independent third party under separate contract with the City of New York. Commissioning shall be in accordance with ASHRAE and USGBC LEED procedures, and specific commissioning requirements of the Project Specifications, whichever is more stringent. Each Contractor shall cooperate with the CxA and provide whatever assistance is required.
- C. Related Sections include without limitation the following:
 - 1. Section 01 10 00 SUMMARY
 - 2. Section 01 31 00 PROJECT MANAGEMENT AND COORDINATION
 - 3. Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION
 - 4. Section 01 78 39 CONTRACT RECORD DOCUMENTS
 - 5. Section 01 79 00 DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION
 - 6. Section 01 81 13 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED BUILDINGS



1.4 DEFINITIONS:

- A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.
- B. Design Consultant: "Design Consultant" shall mean the entity responsible for providing design services for the Project, including without limitation, preparing the construction documents (drawings and specifications) and providing services in connection with such documents during construction. The entity serving as the "Design Consultant" may be a corporation, firm, partnership, joint venture, individual or combination thereof. Such entity may be either an employee(s) of the City or an entity engaged by the City to provide such services.
- C. Commissioner: The Commissioner of the Department of Design and Construction of the City of New York, his/her successors, or duly authorized representative(s).
- D. BoD: Basis of Design: A document, prepared by the Design Consultant that records concepts, calculations, decisions, and product selections used to meet the OPR and to satisfy applicable regulatory requirements, standards, and guidelines. The document includes both narrative descriptions and lists of individual items that support the design process.
- E. Commissioning Plan: A document that outlines the organization, schedule, allocation of resources, and documentation requirements of the commissioning process.
- F. CxA: Commissioning Agent (Aka Commissioning Authority) under separate contract with the City of New York to provide Commissioning Services for this project.
- G. OPR: Owner's (City of New York) Project Requirements: A document, prepared by the Design Consultant that details the functional requirements of a project and the expectations of how it will be used and operated. These include Project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information.
- H. Systems, Subsystems, Equipment, and Components: Where these terms are used together or separately, they shall mean "as-built" systems, subsystems, equipment, and components.
- I. TAB: Testing, Adjusting, and Balancing.

1.5 COMMISSIONING TEAM:

- A. Members Appointed by each Contractor: Individuals, each having authority to act on behalf of the entity he or she represents, explicitly organized to implement the commissioning process through coordinated actions. The commissioning team shall consist of, but not be limited to, representatives of each Contractor, including Project superintendent and subcontractors, installers, suppliers, and specialists deemed appropriate by the CxA.
- B. Members Appointed by the City:
 - 1. Commissioning Authority/Agent (CxA): The designated person, company, or entity under separate contract with the City that plans, schedules, and coordinates the commissioning team to implement the commissioning process.
 - 2. Representatives of the facility user and operation and maintenance personnel.
 - 3. Design Consultant and other concerned entities.



1.6 CITY'S RESPONSIBILITIES:

- A. Provide the OPR documentation to the Commissioning Agent (CxA) for use in developing the commissioning plan; systems manual; operation and maintenance orientation plan; and testing plans and checklists.
- B. Assign operation and maintenance personnel and schedule them to participate in commissioning team activities.
- C. Provide the BoD documents, prepared by the Design Consultant and approved by the Commissioner, to the Commissioning Agent (CxA) for use in developing the commissioning plan, systems manual, and operation and maintenance orientation plan.

1.7 CONTRACTOR'S RESPONSIBILITIES:

- A. The Contractor(s) responsible for each specific service shall provide utility services required for the commissioning process.
- B. As a member of the Commissioning Team, each Contractor and their subcontractors shall assign representatives with expertise and authority to act on behalf of each Contractor and schedule them to participate in and perform commissioning team activities including, but not limited to, the following:
 - 1. Participate in scheduled construction-phase coordination and commissioning team meetings.
 - 2. Integrate and coordinate commissioning process activities with the construction schedule.
 - 3. Review and accept commissioning process test procedures provided by the CxA.
 - 4. Review and accept construction checklists provided by the CxA.
 - 5. Perform testing required in the Commissioning Schedule as per the Commissioning Process test procedures provided by the CxA.
 - 6. Complete installation checklists as Work is completed and return to CxA through the Resident Engineer.
 - 7. Cooperate with the CxA for resolution of issues recorded in the Issues Log.
 - 8. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.
 - 9. Submit As-Built documents, operation and maintenance manuals for systems and subsystems, and equipment in accordance with Section 01 78 39, CONTRACT RECORD DOCUMENTS.
 - 10. Provide orientation sessions for operation and maintenance personnel (sessions will be recorded by each contractor providing demonstration and orientation instruction sessions) in accordance with Section 01 79 00, DEMONSTRATION AND OWNER'S PRE-ACCEPTANCE ORIENTATION.

1.8 COMMISSIONING AGENT'S (CxA) RESPONSIBILITIES:

- A. Organize and lead the commissioning team.
- B. Prepare a construction-phase commissioning plan. Collaborate through the Resident Engineer with each Contractor and with subcontractors to develop test and inspection procedures. Include design changes and coordinate commissioning activities with the overall Project schedule. Identify commissioning team member responsibilities, by name, firm, and trade specialty, for performance of each commissioning task.
- C. Review and comment in accordance with Section 01 33 00, SUBMITTAL PROCEDURES, on submittals from each Contractor for compliance with the OPR, BoD, Contract Documents, and construction-phase commissioning plan. Review and comment on performance expectations of systems and equipment and interface between systems relating to the OPR and BoD.
- D. Coordinate with the Resident Engineer to convene commissioning team meetings for the purpose of coordination, communication, and conflict resolution; discuss progress of the commissioning processes. Responsibilities include arranging for facilities, preparing agenda and attendance lists, and notifying



participants. The Commissioning Agent (CxA) will prepare and distribute minutes to commissioning team members and attendees within three workdays of the commissioning meeting.

- E. At the beginning of the construction phase, coordinate with the Resident Engineer's kick-off meeting schedule to conduct an initial construction-phase coordination meeting for the purpose of reviewing the commissioning activities and establishing tentative schedules for operation and maintenance submittals, operation and maintenance orientation sessions, TAB Work, and Project completion.
- F. Observe and inspect construction. Report progress and deficiencies to the Commissioner. In addition to compliance with the OPR, BoD, and Contract Documents, inspect systems and equipment installation for adequate accessibility required for component maintenance replacement and repair.
- G. Prepare Project-specific test and inspection procedures and checklists.
- H. Coordinate with the Resident Engineer to schedule, direct, witness, and document tests, inspections, and systems startup.
- I. Compile test data, inspection reports, and certificates and include them in the systems manual and commissioning report.
- J. Certify date of acceptance and startup for each item of equipment for start of warranty periods.
- K. Review and comment on operation and maintenance documentation and systems manual outline for compliance with the OPR, BoD, and Contract Documents. Operation and maintenance documentation requirements are specified in other sections of the project specifications and described in Section 01 78 39, CONTRACT RECORD DOCUMENTS.
- L. Record and edit demonstration and orientation sessions on DVD.
- M. Prepare commissioning reports.
- N. Assemble the final commissioning documentation, including the commissioning report and Systems Manual.

1.9 COMMISSIONING DOCUMENTATION:

Each Contractor shall assist the Commissioning Agent (CxA) in the development and compiling of the following Commissioning Documentation:

- A. Index of Commissioning Documents: The Commissioning Agent (CxA) will prepare an index including the storage location of each document.
- B. OPR: A written document prepared by the Design Consultant that details the functional requirements of the Project and expectations of how it will be used and operated. This document includes the Project and design goals, measurable performance criteria, budgets, schedules, success criteria, and supporting information.
- C. BoD Document: A document, prepared by the Design Consultant, that records concepts, calculations, decisions, and product selections used to meet the OPR and to satisfy applicable regulatory requirements, standards, and guidelines. The document includes both narrative descriptions and lists of individual items that explain the designed systems.
- D. Commissioning Plan: A document, prepared by the Commissioning Agent (CxA), that outlines the schedule, allocation of resources, and documentation requirements of the commissioning process.
- E. Test Checklists: The Commissioning Agent (CxA) will develop test checklists for each system, subsystem, or equipment including interfaces and interlocks, and include a separate entry, with space for comments, for each item to be tested. The CxA will prepare separate checklists for each mode of operation and provide space to indicate whether the mode under test responded as required. Space will be provided for testing personnel to sign off on each checklist. Specific checklist content requirements are specified in other sections of the project specifications.



- F. Inspection Checklists will be signed by each Contractor, Subcontractor(s), Installer(s), and CxA certifying that systems, subsystems, equipment, and associated controls are ready for testing.
- G. Test and Inspection Reports: The Commissioning Agent (CxA) will record test data, observations, and measurements on test checklists. Photographs, forms, and other means appropriate for the application will be included with data. CxA shall compile test and inspection reports and test and inspection certificates and include them in systems manual and commissioning report.
- H. Corrective Action Documents: The Commissioning Agent (CxA) will document corrective action taken for systems and equipment that fail tests and include required modifications to systems and equipment and revisions to test procedures, if any. Each Contractor, as applicable shall retest systems and equipment requiring corrective action. The CxA will document retest results.
- I. Issues Log: The Commissioning Agent (CxA) will prepare and maintain an issues log that describes design, installation, and performance issues that are at variance with the OPR, BoD, and Contract Documents. The log will identify and track issues as they are encountered, documenting the status of unresolved and resolved issues.
 - 1. Commissioning Report: The Commissioning Agent (CxA) will document results of the commissioning process including unresolved issues and performance of systems, subsystems, and equipment. The commissioning report will indicate whether systems, subsystems, and equipment have been completed and are performing according to the OPR, BoD, and Contract Documents.
- J. Systems Manual: The Commissioning Agent (CxA) will gather required information and compile systems manual as specified in other sections of the project specifications and described in Section 01 78 39, CONTRACT RECORD DOCUMENTS..

1.10 SUBMITTALS:

- A. Commissioning Plan Pre-final Submittal: The Commissioning Agent (CxA) will submit six (6) copies of the pre-final commissioning plan to the Commissioner for review and distribution.
- B. Commissioning Plan Final Submittal: The Commissioning Agent (CxA) will submit six (6) hard copies and electronically formatted information of the final commissioning plan to the Commissioner. The final submittal will address previous review comments.
- C. Test and Inspection Reports: CxA will submit test and inspection reports.
- D. Corrective Action Documents: CxA will submit corrective action documents.

1.11 COORDINATION:

- A. Coordinating Meetings: The Commissioning Agent (CxA) will coordinate with the Resident Engineer's regularly scheduled construction progress meetings to conduct coordination meetings of the commissioning team to review progress on the commissioning plan, to discuss scheduling conflicts, and to discuss upcoming commissioning process activities.
- B. Pre-testing Meetings: The Commissioning Agent (CxA) will coordinate with the Resident Engineer to conduct pretest meetings of the commissioning team to review startup reports, pretest inspection results, testing procedures, testing personnel and instrumentation requirements, and manufacturers' authorized service representative services for each system, subsystem, equipment, and component to be tested.
- C. Testing Coordination: The Commissioning Agent (CxA) will coordinate with the Resident Engineer the sequence of testing activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.



1. Coordinate schedule times with the Resident Engineer for tests, inspections, obtaining samples, and similar activities.
- D. Manufacturers' Field Services: The Commissioning Agent (CxA) will coordinate services of manufacturers' field services.

PART II – PRODUCTS (Not Used)

PART III – EXECUTION

3.1 OPERATION & MAINTENANCE MANUALS

- A. General
1. The CxA shall review the Operation & Maintenance manuals provided by each Contractor(s) or their subcontractors for completeness of the document. The review process shall verify that Operation & Maintenance instructions meet specifications and are included for all Commissioned equipment furnished by each Contractor.
 2. Published literature shall be specifically oriented to the provided equipment, indicating required operation and maintenance procedures, parts lists, assembly / disassembly diagrams and related information.
 3. Each Contractor shall incorporate the standard technical literature into system specific formats for this facility as designed and as actually installed. The resulting Operation & Maintenance information shall be system specific, concise, to the point and tailored specifically to this facility. The CxA shall review these documents as necessary for final corrections by each Contractor(s) as applicable.
- B. The Operation & Maintenance Manual review and coordination efforts shall be completed prior to Owner orientation sessions, as these documents are to be utilized in the orientation sessions.
- C. System Operations Manual
1. The CxA shall prepare and deliver these documents with inputs from other agencies. Each Contractor(s) will confirm the proper documents are onsite and readily available. Typically, the manual includes the following:
 - a. Commissioned systems single line diagrams (Mechanical, Electrical, Plumbing, and Building Management System (BMS) subcontractors).
 - b. As built sequences of operations, control drawings and original set points (Design Consultant, and BMS subcontractor)
 - c. Operating instructions for integrated building systems (mechanical and BMS subcontractors).
 - d. Recommended schedule of maintenance requirements and frequency (subcontractors).
 - e. Recommended schedule for calibrating sensors and actuators (BMS subcontractor)

3.2 DEMONSTRATION AND INSTRUCTION

- A. Each Contractor shall schedule and coordinate instruction sessions for the facility's staff for each commissioned system. Demonstrations shall be held per Contract Documents, along with the appropriate schematics, handouts and visual / audio training aids onsite with equipment.
- B. The equipment vendors shall provide instruction on the specifics of each major equipment item including philosophy, troubleshooting and repair techniques.
- C. For additional prescription pertinent to instruction, refer to other specific divisions for demonstration and instruction requirements.



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
MULTIPLE CONTRACT PROJECTS
Issue Date - January 15, 2015

3.3 WARRANTY REVIEW / SEASONAL TESTING

- A. The CxA will return upon the start of the new season (cooling or heating) after project completion to conduct performance tests that could not be performed due to ambient conditions. The seasonal testing will only be performed if unsuitable loads / conditions were unavailable during the performance testing stages (in other words; the requirement for testing is warranted).
- B. If agreed upon by facility, Seasonal Testing can also be used for the Warranty Review. During which the CxA will interview the occupants, maintenance staff, review the operation of the building, provide recommendations for installation and operational problems and document warranty and operational issues in the issues database.

3.4 RECORD DRAWINGS

- A. The CxA shall review the as built contract documents to verify incorporation of both design changes and as built construction details. Discrepancies noted shall be corrected by the appropriate party.

END OF SECTION 01 91 13



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

Division 01 – DDC STANDARD GENERAL CONDITIONS
MULTIPLE CONTRACT PROJECTS
Issue Date January 15, 2015

NO TEXT

GENERAL COMMISSIONING REQUIREMENTS
01 91 13 - 8



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**THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS**

30-30 THOMSON AVENUE LONG ISLAND CITY, NEW YORK 11101-3045
TELEPHONE (718) 391-1000 WEBSITE www.nyc.gov/buildnyc

Contract for Furnishing all Labor and Material Necessary

Contractor

Dated _____, 20____

Approved as to Form
Certified as to Legal Authority

Acting Corporation Counsel

Dated _____, 20____

Entered in the Comptroller's Office

First Assistant Bookkeeper

Dated _____, 20____



FMS ID: PV181HSA2



**THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS**

30-30 THOMSON AVENUE LONG ISLAND CITY, NEW YORK 11101-3045
TELEPHONE (718) 391-1000 WEBSITE www.nyc.gov/buildnyc

Contract for Furnishing all Labor and Material Necessary and Required for:

CONTRACT NO. 1 GENERAL CONSTRUCTION

**Harlem School of the Arts, Phase II
Building Renovations**

LOCATION: 645 St. Nicholas Avenue
BOROUGH: Manhattan 10031
CITY OF NEW YORK

A. Aleem Construction Inc.
Contractor

Dated June 30, 2016

Approved as to Form
Certified as to Legal Authority
[Signature]
Acting Corporation Counsel

Dated September 24, 2015

Entered in the Comptroller's Office

First Assistant Bookkeeper

Dated _____, 20____

JP
9.24.15





PROJECT ID:

PV181HSA2

**THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS**

30-30 THOMSON AVENUE
LONG ISLAND CITY, NEW YORK 11101-3045
TELEPHONE (718) 391-1000
WEBSITE www.nyc.gov/buildnyc

VOLUME 3 OF 3

LAW

**ADDENDUM TO THE GENERAL
CONDITIONS**

SPECIFICATIONS

FOR FURNISHING ALL LABOR AND MATERIALS
NECESSARY AND REQUIRED FOR:

**Harlem School of the Arts, Phase II
Building Renovations**

LOCATION:
BOROUGH:
CITY OF NEW YORK

645 St. Nicholas Avenue
Manhattan 10031

CONTRACT NO. 1

GENERAL CONSTRUCTION

DCA

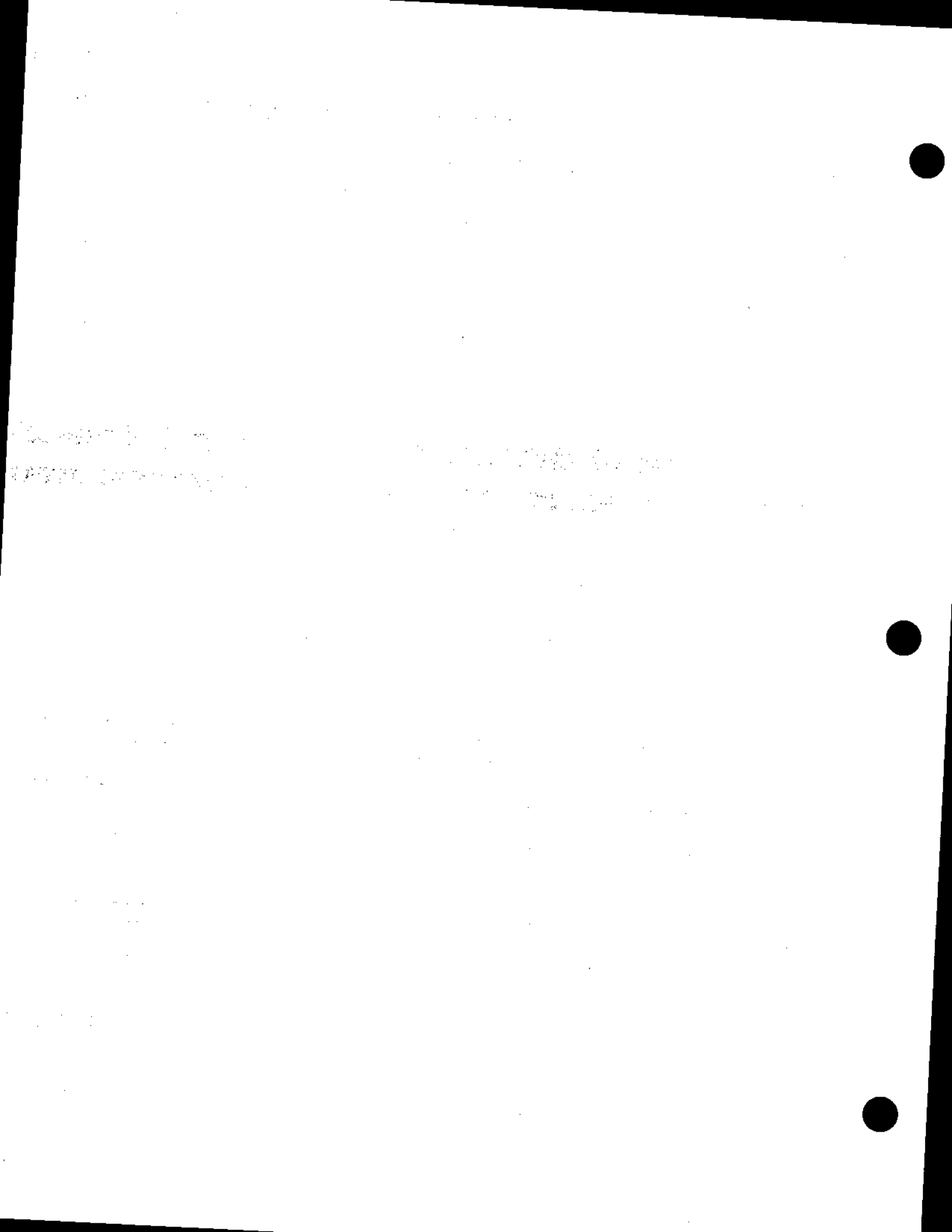
Greenman-Pedersen, Inc.

Date:

May 27, 2015



15-188



THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

November 9, 2015

ADDENDUM No. # 1

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

PV181HSA2

Harlem School of the Arts, Phase II Building Renovations

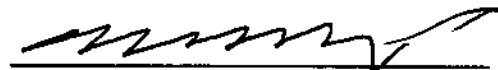
This addendum is issued for the purpose of amending the requirements of the Bid and Contract Documents and is hereby made a part of said Bid and Contract Documents to the same extent as though it were originally included therein.

The bidder is advised that the items listed below apply to the project:

1. **Questions from Bidders and Responses to Questions:**
See Attachment A.
2. **Revisions to the Addendum to the General Conditions:**
See Attachment B.
3. **Revisions to the Drawings:**
See Attachment C.
4. **Revisions to Volume 2 of 3:**
See Attachment D.

THIS ADDENDUM MUST BE SIGNED BY ALL BIDDERS AND ATTACHED TO THEIR BIDS.

If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-3170, (718) 391-1016, or by fax at (718) 391-2615.



Michael Nastasi
Assistant Commissioner
Cultural/ Parks Programs

Name of Bidder

By: _____

DDC PROJECT #: PV181HSA2

PROJECT NAME: Harlem School of the Arts, Phase II Building Renovations.

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

No.	Bidders Questions	DDC Responses
1	Please provide the name and contact information for the existing building Fire Alarm Company.	The existing Fire Alarm Company information is listed below: Fire Alarm maintenance vendor: Classic Systems, Inc. New York office (516) 997-9100 86 Garden Street, Westbury, NY 11590. Contacts: Mike Terry or Ron Schaal. Company Website: classicsystemsinc.com .
2	Project includes underpinning requirement at elevator outline on the 1 st floor. Please determine length and depth of underpinning work shown on Drawing S-005, detail 8 to properly price the task.	Contractor shall include in bid price 24" deep rock excavation for elevator pit. Excavation area is 11'-4" x 9'-4". Underpinning requirement is excluded from the project.
3	Please provide missing drawing #DM-004.00, First Floor Plan Demolition.	Missing drawing #DM-004.00 is included with this Addendum. Refer to Attachment C – Revisions to the Drawings
4	Please provide an electronic excel file of the Bid Breakdown.	An electronic excel file of the Bid Breakdown will be made available to the successful bidder.

DDC PROJECT #: PV181HSA2

PROJECT NAME: Harlem School of the Arts, Phase II Building Renovations.

ATTACHMENT B – REVISIONS TO THE ADDENDUM TO THE GENERAL CONDITIONS

1. Delete Addendum to the General Conditions (dated January 15, 2015) and replace with revised Addendum to the General Conditions (dated July 01, 2015), included with this Addendum.

DDC PROJECT #: PV181HSA2

PROJECT NAME: Harlem School of the Arts, Phase II Building Renovations.

ATTACHMENT C – REVISIONS TO THE DRAWINGS

1. Drawing Sheet DM-004.00 First Floor Plan Demolition:
Include missing drawing DM-004.00 First Floor Plan Demolition, included with this Addendum.

DDC PROJECT #: PV181HSA2

PROJECT NAME: Harlem School of the Arts, Phase II Building Renovations.

ATTACHMENT D – REVISIONS TO VOLUME 2 of 3

1. Insert Hiring and Employment Rider, included with this Addendum.
2. Insert Paid Sick Leave Law Contract Rider, included with this Addendum.



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

ADDENDUM TO THE GENERAL CONDITIONS
FOR SINGLE CONTRACT PROJECTS

The General Conditions are hereby amended in accordance
with the terms and conditions set forth in this Addendum.

I. PROJECT DESCRIPTION

FMS #: PV181HSA2

PROJECT NAME: HARLEM SCHOOL OF THE ARTS, PHASE II BUILDING RENOVATIONS

PROJECT DESCRIPTION: This Project consists of upgrade of the existing facility which will include the rehabilitation of the main entrance to achieve barrier free accessibility, creation of a barrier free restroom on the second floor, installation of a new elevator to serve the first, second, and third floors, replacing the boiler and hot water systems, new central air-conditioning units, modification of existing air- distribution system, and provide additional electrical outlets in the "G Space" to be used for portable sound and lighting devices.

PROJECT LOCATION: 645 St Nicholas Avenue
BOROUGH: Manhattan
CITY OF NEW YORK
ZIP CODE: 10031
COMMUNITY BOARD #: 109

LANDMARK STATUS:

DESIGNATED LANDMARK STRUCTURE OR SITE: NO

LANDMARK QUALITY STRUCTURE: NO

II. LEED GREEN BUILDING REQUIREMENTS

Not Used.

III. COMMISSIONING REQUIREMENTS

Not Used

IV. PROJECT MANAGEMENT

DDC shall publicly bid and enter into all contracts for the Project. DDC shall manage the Project using its own personnel.

DDC shall publicly bid and enter into all contracts for the Project. A Construction Management firm (the "CM") hired by DDC shall manage the Project. The Contractor is advised that the CM shall serve as the representative of the Commissioner at the site and shall, subject to review by the Commissioner, be responsible for the inspection, management, coordination and administration of the required construction work, as delineated in the article of the Standard Construction Contract entitled "The Resident Engineer".

V. CONTRACTS FOR THE PROJECT

The Project consists of a single contract, the Contract for General Construction Work. The Contractor for General Construction Work is responsible for the performance of all required work for the Project as set forth in the Contract Documents (General Conditions, Drawings and Specifications), including all responsibilities and obligations assigned to separate Contractors for the following subdivisions of the work: Plumbing Work, HVAC Work, and Electrical Work. All responsibilities and obligations in the Contract Documents assigned to separate Contractors for such subdivisions of the work are the responsibility of the Contractor for General Construction Work.

The separate Contracts pertaining to this Project are set forth below:

Contract No. 1 - Contract for General Construction Work

VI. SCHEDULES

The Contractor is advised that Schedules A through F are attached to, and incorporated as part of, this Addendum to the General Conditions. These schedules contain important information that is specific to this Project. The Contractor is advised to carefully review these schedules.

VII. APPLICABILITY OF SECTIONS/SUB-SECTIONS AND AMENDED SUB-SECTIONS

The Contractor is advised that various Sections/Sub-Sections in the General Conditions may not apply to this Project or may apply as amended. Such Sections/Sub-Sections advise the Contractor to "Refer to the Addendum for the applicability of this Section/Sub-Section." Such Sections/Sub-Sections are set forth below. A check mark indicates whether the Section/Sub-Section (1) applies to the Project, (2) does not apply to the Project, or (3) applies to the Project as amended. If no box is checked, the Section/Sub-Section, as set forth in the General Conditions, applies to the Project. Amended Sections/Sub-Sections, if any, are set forth following this list of Sections.

<u>Section</u>	<u>Sub-Section</u>	<u>Sub-Section</u>	<u>Applies</u>	<u>Does not Apply</u>	<u>Applies as Amended</u>
01 1000	1.4 (B)	Scope and Intent / LEED		x	
	1.4(C)	Scope and Intent / Commissioning		x	
01 3233		Photographic Documentation		x	
01 3300	1.7 (A-D)	LEED Submittals		x	
01 3503		General Mechanical Requirements	x		
01 3506	3.2 (A-B)	Electrical Conduit System Including Boxes (Pull, Junction and Outlet)	x		
	3.3 (A-E)	Electrical Wiring Devices	x		
	3.4 (A-I)	Electrical Conductors and Terminations	x		
	3.5 (A-B)	Circuit Protective Devices	x		
	3.6 (A-J)	Distribution Centers	x		
	3.7 (A-I)	Motors	x		
	3.8 (A-I)	Motor Control Equipment	x		
01 3591		Historic Treatment Procedures		x	
01 5000	3.2 (A)	Temporary Water Facilities / Temporary Water		x	
	3.2 (B)	Temporary Water Facilities / Temporary Water – Work in Existing Facilities	x		
	3.3 (B)	Temporary Sanitary Facilities / Self-Contained Toilet Units		x	
	3.3 (C)	Temporary Sanitary Facilities / Existing Toilets	x		
	3.4 (B) 1	Temporary Power, Lighting, and Site Lighting / Connection to Utility Lines		x	

<u>Section</u>	<u>Sub-Section</u>	<u>Sub-Section</u>	<u>Applies</u>	<u>Does not Apply</u>	<u>Applies as Amended</u>
01 5000	3.4 (B) 2	Temporary Power, Lighting, and Site Lighting / Connection to Existing Electrical Power Service	x		
	3.4 (B) 3	Temporary Power, Lighting, and Site Lighting / Electrical Generator Power Service		x	
	3.4 (D)	Temporary Power, Lighting, and Site Lighting / Temporary Lighting		x	
	3.4 (E)	Temporary Power, Lighting, and Site Lighting / Site Security Lighting (for New Construction Only)		x	
	3.5 (A-J)	Temporary Heat	x		
	3.8 (A)	DDC Field Office / Office Space in Existing Building		x	
	3.8 (B)	DDC Field Office / DDC Field Office Trailer	x		
	3.8 (B-3a)	DDC Field Office / DDC Managed Field Office Trailer	x		
	3.8 (B-3b)	DDC Field Office / CM Managed Field Office Trailer		x	
	3.8 (D)	DDC Field Office / Additional Equipment for the DDC Field Office	x		
	3.13(A-D)	Work Fence Enclosure		x	
	3.17(B)	Project Rendering		x	
	3.18 (A-C)	Security Guards / Fire Guards on Site		x	
01 5411	3.1 (A-J)	Temporary Use, Operation and Maintenance of Elevators During Construction for New Buildings Up To and Including 15 Stories		x	
	3.2 (A-M)	Temporary Use, Operation and Maintenance of Elevators During Construction for New Buildings Over 15 Stories		x	
	3.3 (A-E)	Temporary Use, Operation and Maintenance of Elevators During Construction for Existing Buildings		x	
01 7300	3.3 (A-I)	Surveys			x
	3.4 (A-B)	Borings		x	
	3.12 (A-D)	Sleeves and Hangers	x		
	3.13 (A)	Sleeve and Penetration Drawings	x		
	3.15 (A)	Location of Partitions	x		
01 7419	1.5 (C)	Waste Management Performance Requirements / LEED Certification		x	
01 7900		Demonstration and Owner's Pre-Acceptance Orientation	x		
01 8113		Sustainable Design Requirements for LEED Buildings		x	
01 8113.13		VOC Limits for Adhesives, Sealants, Paints and Coatings for LEED Buildings		x	
01 8119		Indoor Air Quality Requirements for LEED Buildings		x	
01 9113		General Commissioning Requirements	x		

AMENDED SECTIONS/SUB-SECTIONS

The Contractor is advised that the amended Sub-Sections set forth below are included in the General Conditions and apply to the Project.

1. Section 017300 Execution, Articles 3.3 A thru D are not applicable for this project. Applicable Articles are 3.3 E thru I.

ADDITIONAL SECTION/SUB-SECTIONS

PROJECT WORKING HOURS

- A. The Contractor shall establish the work hours for the project within the parameters set forth by the City of New York Department of Buildings, the Department of Environmental Protection, and other agencies having such jurisdiction. Provide the Commissioner with a schedule of the intended hours in order for it to set its personnel schedule.
- B. No overtime work shall be performed without prior written approval by the Commissioner.
- C. When performing work during "After hours" periods as determined by the NYC Building Department, obtain and pay for all required permits.
- D. The Harlem School of The Arts (HSA) will remain open during construction. Construction activities shall be performed between 7:00 AM and 3:00 PM, Monday to Friday. All areas must be swept and cleaned by 3:00pm. All contractors and workers must exit HSA property by 3:15pm.

CONTRACTOR GUIDELINES

- A. Construction Progress Meetings shall be as per General Conditions Section 013100 Project Management and Coordination.
- B. Appointed construction supervisor must be onsite at all times while construction workers are in the building.
- C. Construction materials may not be left in front of the main entrance or in courtyard. The building's main entrance may not be used for deliveries.
- D. Debris may not be left in front of the building. All dumpsters related to construction must be arranged and supervised by construction supervisor.
- E. Dust Control as per General Conditions Section 011000 Summary.
- F. All contractors and workers must sign in and out daily.
- G. Egress from the building must be clearly defined and adhere to current NYC Fire Department and Department of Building codes during construction.

PHASING

A. Order of Work:

1. To complete all the work of all Trades within the required Contract Duration, and to accommodate Project needs, the Work of this Contract shall be performed in "Phases" coordinated with HSA and DDC. Prior to commencement of work, General Contractor shall develop a Phasing Plan outlining all major phases of the projects that will be performed consequently or concurrently, and submit to DDC/HSA for approval.
2. *Order of Work and Phasing Plan shall address the following Priorities:*
 - a. *Boiler Room Renovation (Boiler, Water Heater, Pumps, Piping).*
 - b. *Replacement of HVAC Rooftop Units and Modification to existing ductwork, including replacement of several VAV boxes.*
 - c. *Installation of New Elevator.*
 - d. *Renovation and installation of ADA-compliant bathroom on the second floor.*
 - e. *Modification of Access Ramp and Entrance Doors.*
3. *Phasing Plan should consider seasonal constraints and Occupancy Level.*

General Contractor and sub-contractors should consider the following Notes and Recommendations:

- a. *Existing hot water distribution systems (boiler, pumps, hot water heater) are not functional. Boiler Room renovation can be performed during any season.*
- b. *Rooftop Units HVAC-2, HVAC-3, HVAC-4, and HVAC-5 provide cooling and heating for main HSA spaces and studios. Replacement of these units shall be well coordinated and performed during the spring or fall. Replacement of these units shall be completed by the beginning of heating season.*
- c. *Installation of the new elevator includes cutting of slabs, underpinning, roof opening and construction of elevator shaft. Slab opening on second floor will require installation of support steel and temporary dust mitigation partitions to allow use of the remaining portion of the Recital Room during the evening hours. Roof opening shall be temporarily protected and waterproofed. Preferable period for installation of elevator shaft is from May to the end of September.*
- d. *ADA-compliant toilet could be constructed during any seasons (subject to approval and coordination with HSA-planned high occupancy events).*
- e. *Renovation to access ramp and entrances will require the use of alternate means of egress. It should be scheduled and coordinated with HSA.*

Contractor Phasing Plan shall address the following:

- Public safety.
- Accessibility to the means of egress.
- Safe access by occupants to the working place or visiting destination.
- As minimal as possible, interruption of the daily activities of HSA staff without compromising their safety.
- Minimum interruption of utility services.

VIII. SPECIAL EXPERIENCE REQUIREMENTS FOR THE PROJECT

Not Used

IX. REVISIONS: SPECIFICATIONS AND CONTRACT DRAWINGS

The Specifications and the Contract Drawings for the Project are revised in accordance with the provisions set forth below.

- (1) Owner: Wherever the term "Owner" is used in the Specifications and/or the Contract Drawings, such term shall mean the City of New York.
- (2) Other Entities: In the event any entity other than the City of New York is referred to or named as the "Owner" in the Specifications and/or the Contract Drawings, the name of such other entity is deemed deleted and replaced with the "City of New York".
- (3) Architect / Engineer: Wherever the words "Architect", "Engineer", "Architect / Engineer" or "Architect and/or Engineer" are used in the Specifications and/or the Contract Drawings, such words are deemed deleted and replaced with the word "Commissioner".
- (4) Products / Manufacturers: Wherever the Specifications and/or the Contract Drawings require the contractor to provide a particular product (i.e., material and/or equipment) from a designated manufacturer and/or vendor, the term "or approved equal" is deemed inserted, even if only one product and/or manufacturer is specified, except as otherwise provided below.
 - (a) Proprietary Items: If the Bid Booklet contains a Notice which identifies a particular product from a designated manufacturer as a "Proprietary Item", the Contractor shall be required to provide such specified product. In such case, no substitution or "approved equal" will be permitted.
- (5) Special Experience Requirements: Special Experience Requirements for the Project, if any, are set forth in the Bid Booklet. Special Experience Requirements may apply to contractors, subcontractors, installers, manufacturers and/or suppliers. If the Specifications and/or the Contract Drawings contain any Special Experience Requirement that is not set forth in the Bid Booklet, such Special Experience Requirement is deemed deleted, except as otherwise provided below.
 - (a) Any Special Experience Requirement that provides that the entity performing the work or supplying the material must have more than three (3) years of experience, is revised to provide that the entity performing the work or supplying the material must have three (3) years of experience, except as described in paragraph (b) below.
 - (b) Any Special Experience Requirement that pertains to the abatement of hazardous materials shall not be subject to the deletion and/or revision set forth above. Such Special Experience Requirement shall remain in full force and effect.
 - (c) Any Special Experience Requirement that provides that the entity performing the work must be licensed, authorized, certified, approved by or acceptable to the manufacturer, is deemed deleted and replaced with the requirement that such entity must be properly trained for the specified work.
 - (d) Any Special Experience Requirement that provides that the individual workers performing the work must be licensed, authorized, certified, approved by or acceptable to the manufacturer, is deemed deleted and replaced with the requirement that such individual workers must be properly trained for the specified work.
- (6) Alternate Bids: If the agency is requesting the submission of Alternate Bids, a Notice regarding such Alternate Bids is set forth in the Bid Booklet. In the event of any conflict or inconsistency between (1) the Notice regarding Alternate Bids set forth in the Bid Booklet and (2) a provision in the Specifications and/or the Contract Drawings regarding Alternate Bids, the Notice set forth in the Bid Booklet shall prevail. If the agency is not requesting the submission of Alternate Bids, as indicated by the absence of a Notice in the Bid Booklet, and the Specifications and/or the Contract Drawings contain any provision regarding Alternate Bids, such provision is deemed deleted.
- (7) Contractor Retained Engineer: If the Specifications and/or the Contract Drawings require the Contractor to retain an Engineer to provide engineering services for the Project, the following sentence is deemed inserted: "Such Engineer must be a Professional Engineer, licensed in the State of New York."

- (8) **LEED Related Provisions:** If the Specifications and/or the Contract Drawings require the Contractor to purchase FSC certified wood, rapidly renewable materials, or materials within 500 miles, such provisions are deemed deleted and replaced with the requirement that if the contractor has purchased FSC certified wood, rapidly renewable materials, or materials within 500 miles, the contractor shall submit such forms or documentation as may be required by the City in order for the USGBC to certify that the Project qualifies for the related LEED credit(s).
- (9) **Guarantees:** Requirements for Guarantees and Maintenance are set forth in Schedule B, which is included in the Addendum to the General Conditions. In the event of any conflict or inconsistency between (1) a guarantee and/or maintenance requirement set forth in the Specifications and/or the Contract Drawings and (2) a guarantee and/or maintenance requirement set forth in Schedule B, the guarantee and/or maintenance requirement set forth in Schedule B shall prevail.
- (10) **Warranties:** Requirements for Warranties are set forth in Schedule B, which is included in the Addendum to the General Conditions.
- (a) In the event of any conflict or inconsistency between (1) a warranty requirement set forth in the Specifications and/or the Contract Drawings and (2) a warranty requirement set forth in Schedule B, the warranty requirement set forth in Schedule B shall prevail.
- (b) In the event a warranty requirement set forth in the Specifications and/or the Contract Drawings is omitted from Schedule B, such omission from Schedule B shall have no effect and the Contractor's obligation to provide the manufacturer's warranty, as set forth in the Specifications and/or the Contract Drawings, shall remain in full force and effect.
- (c) In the event a warranty requirement for a particular item of material or equipment is omitted from Schedule B, as well as from the Specifications or the Contract Drawings, and the manufacturer of such item actually provides a warranty, the Contractor shall be obligated to obtain and deliver to the Commissioner the highest level of warranty actually provided by that manufacturer.
- (11) **Exculpatory Provisions:** In the event the Specifications and/or the Contract Drawings contain any provision whereby the consultant and/or any of its officers, employees or agents, including subconsultants, is absolved of responsibility for any act or omission, such provision is deemed deleted.
- (12) **Insurance:** Provisions regarding insurance coverage the Contractor is required to provide are set forth in Article 22 of the City of New York Standard Construction Contract and Schedule A, which is included in the Addendum to the General Conditions. In the event the Specifications and/or the Contract Drawings contain any provision regarding insurance requirements, such provision is deemed deleted.
- (13) **Indemnification:** Provisions regarding indemnification are set forth in Articles 7, 12, 22 and 57 of the City of New York Standard Construction Contract. In the event the Specifications and/or the Contract Drawings contain any provision regarding indemnification, such provision is deemed deleted.
- (14) **Dispute Resolution:** Provisions regarding dispute resolution are set forth in Article 27 of the City of New York Standard Construction Contract. In the event the Specifications and/or the Contract Drawings contain any provision regarding dispute resolution, such provision is deemed deleted.
- (15) **Payment to Other Entities:** In the event the Specifications and/or the Contract Drawings contain any provision which requires the Contractor to make payments to an entity other than a subcontractor and/or supplier providing services and/or material for the project, such provision is deemed deleted.
- (16) **General Conditions:** In the event of any conflict or inconsistency between (1) the Specifications and/or the Contract Drawings and (2) the General Conditions, the General Conditions shall prevail.
- (17) **Standard Construction Contract:** In the event of any conflict or inconsistency between (1) the Specifications and/or the Contract Drawings and (2) the City of New York Standard Construction Contract, the City of New York Standard Construction Contract shall prevail.

SCHEDULE A (FOR PUBLICLY BID PROJECTS)
Contract Requirements

Various Articles of the Contract refer to requirements which are set forth in Schedule A of the General Conditions. The Schedule set forth below specifies the following: (1) the referenced Articles of the Contract, and (2) the specific requirements applicable to each separate contract.

REFERENCE	ITEM	REQUIREMENTS	CONTRACT #1
Information For Bidders	Bid Security		See Attachment 1 – Bid Information in the Bid Booklet
Information For Bidders	Performance and Payment Bonds		See Attachment 1- Bid Information in the Bid Booklet
Article 14 Contract	Time of Completion	Consecutive Calendar Days	480 ccds
Article 15 Contract	Liquidated Damages	For each consecutive calendar day over completion time	400
Article 17 Contract	Sub-Contracts	Not to exceed Percent of Contract Price	60%
Article 21 Contract	Retainage	Percent of Voucher	If 100% bonds are required 5% If 100% bonds are not required, and Contract Price is \$1,000,000 or less 5% If 100% bonds are not required, and Contract Price is more than \$1,000,000 10%
Article 24 Contract	Deposit Guarantee	Percent of Contract Price	1%
Article 24 Contract	Period of Guarantee		See Schedule B of the Addendum to the General Conditions
Article 74 Contract	Statement of Work		See Contract Article 74
Article 75 Contract	Compensation to be Paid to Contractor		See Contract Article 75
Article 78 Contract	MWBE Program		See MWBE Utilization Plan in the Bid Booklet

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions

Note: All certificate(s) of insurance submitted pursuant to Contract Article 22.3. 3 must be accompanied by a Certification by Broker consistent with Part III below and include the following information:

- For each insurance policy, the name and NAIC number of issuing company, number of policy, and effective dates;
- Policy limits consistent with the requirements listed below;
- Additional insureds or loss payees consistent with the requirements listed below; and
- The number assigned to the Contract by the City (in the "Description of Operations" field).

Insurance indicated by a blackened box (■) or by (X) in the to left will be required under this contract.

Types of Insurance (per Article 22 in its entirety, including listed paragraph)	Minimum Limits and Special Conditions
<p>■ Commercial General Liability Art. 22.1.1</p>	<p>The minimum limits shall be \$1,000,000.00 per occurrence and \$2,000,000.00 per project aggregate applicable to this Contract.</p> <p>Additional Insureds:</p> <p>1. City of New York, including its officials and employees, with coverage at least as broad as ISO Forms CG 20 10 and CG 20 37, and</p> <p>2. All person(s) or organization(s), if any, that Article 22.1.1(b) of the Contract requires to be named as Additional Insured(s), with coverage at least as broad as ISO Form CG 20 26. The Additional Insured endorsement shall either specify the entity's name, if known, or the entity's title (e.g., Project Manager).</p> <p>3. The Harlem School of Arts, Inc.</p>
<p>■ Workers' Compensation Art. 22.1.2</p> <p>■ Disability Benefits Insurance Art. 22.1.2</p> <p>■ Employers' Liability Art. 22.1.2</p> <p><input type="checkbox"/> Jones Act Art. 22.1.3</p> <p><input type="checkbox"/> U.S. Longshoremen's and Harbor Workers Compensation Act Art. 22.1.3</p>	<p>Workers' Compensation, Employers' Liability, and Disability Benefits Insurance: Statutory per New York State law without regard to jurisdiction.</p> <p>Note: The following forms are acceptable: (1) New York State Workers' Compensation Board Form No. C-105.2, (2) State Insurance Fund Form No. U-26.3, (3) New York State Workers' Compensation Board Form No. DB-120.1 and (3) Request for WC/DB Exemption Form No. CE-200. The City will not accept an ACORD form as proof of Workers' Compensation or Disability Insurance.</p> <p>Jones Act and U.S. Longshoremen's and Harbor Workers' Compensation Act: Statutory per U.S. law.</p>

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions

Insurance Indicated by a blackened box (■) or by (X) in the to left will be required under this contract.

Types of Insurance (per Article 22 in its entirety, including listed paragraph)	Minimum Limits and Special Conditions
<input checked="" type="checkbox"/> Builders' Risk Art. 22.1.4	100 % of total value of Work Contractor the Named Insured; the City both an Additional Insured and one of the loss payees as its interests may appear. If the Work does not involve construction of a new building or gut renovation work, the Contractor may provide an installation floater in lieu of Builders Risk insurance. Note: Builders Risk Insurance may terminate upon Substantial Completion of the Work in its entirety.
<input checked="" type="checkbox"/> Commercial Auto Liability Art. 22.1.5	\$1,000,000.00 per accident combined single limit If vehicles are used for transporting hazardous materials, the Contractor shall provide pollution liability broadened coverage for covered vehicles (endorsement CA 99 48) as well as proof of MCS 90
<input type="checkbox"/> Contractor's Pollution Liability Art. 22.1.6	\$ _____ per occurrence \$ _____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
<input type="checkbox"/> Marine Protection and Indemnity Art. 22.1.7(a)	\$ _____ per occurrence \$ _____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions (Continued)

Insurance indicated by a blackened box (■) or by (X) in the to left will be required under this contract.

Types of Insurance (per Article 22 in its entirety, including listed paragraph)	Minimum Limits and Special Conditions
<input type="checkbox"/> Hull and Machinery Insurance Art. 22.1.7(b)	\$ _____ per occurrence \$ _____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
<input type="checkbox"/> Marine Pollution Liability Art. 22.1.7(c)	\$ _____ each occurrence Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
[OTHER] Art. 22.1.8 <input type="checkbox"/> Ship Repairers Legal Liability	\$ _____ each occurrence [Contracting agency to fill in total value of City vessels involved]
[OTHER] Art. 22.1.8 <input type="checkbox"/> Collision Liability/Towers Liability	\$ _____ per occurrence \$ _____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
[OTHER] Art. 22.1.8 <input type="checkbox"/> Railroad Protective Liability	\$ _____ per occurrence \$ _____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions (Continued)

Insurance indicated by a blackened box (■) or by (X) in the to left will be required under this contract.

<p>[OTHER] Art. 22.1.8</p> <p><input type="checkbox"/> Asbestos Liability _____</p>	<p>Only required of the Contractor or Subcontractor performing any required asbestos removal.</p> <p>\$1,000,000 each occurrence, \$2,000,000 aggregate (Combined Single Limit); only required of the Contractor or Subcontractor performing any required asbestos removal.</p> <p>Additional Insureds: 1. City of New York, including its officials and employees, and</p> <p>2. _____</p> <p>3. _____</p>
<p>[OTHER] Art. 22.1.8</p> <p>■ Boiler Insurance _____</p>	<p>\$200,000</p>
<p>[OTHER] Art. 22.1.8</p> <p>■ Professional Liability</p> <p>In the event any section of the Specifications requires the Contractor to engage a Professional Engineer to provide design and/or engineering services, the Engineer engaged by the Contractor, as well as any sub consultant(s) performing professional services, shall provide Professional Liability Insurance.</p>	<p>\$1,000,000 per occurrence</p> <p>The Contractor's Professional Engineer shall maintain and submit evidence of Professional Liability Insurance in the minimum amount of \$1,000,000 per claim. The policy or policies shall include an endorsement to cover the liability assumed by the Contractor under this Agreement arising out of the negligent performance of professional services or caused by an error, omission or negligent act of the Contractor's Professional Engineer or anyone employed by the Contractor's Professional Engineer.</p> <p>Claims-made policies will be accepted for Professional Liability Insurance. All such policies shall have an extended reporting period option or automatic coverage of not less than two (2) years. If available as an option, the Contractor's Professional Engineer shall purchase extended reporting period coverage effective on cancellation or termination of such insurance unless a new policy is secured with a retroactive date, including at least the last policy year.</p>

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART III. Certificates of Insurance

All certificates of insurance (except certificates of insurance solely evidencing Workers' Compensation Insurance, Employer's Liability Insurance, and/or Disability Benefits Insurance) must be accompanied by one of the following:

- (1) the Certification by Insurance Broker or Agent on the following page setting forth the required information and signatures;

-- OR --

- (2) copies of all policies as certified by an authorized representative of the issuing insurance carrier that are referenced in such certificate of insurance. If any policy is not available at the time of submission, certified binders may be submitted until such time as the policy is available, at which time a certified copy of the policy shall be submitted.

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART III. Certification by Insurance Broker or Agent

The undersigned insurance broker or agent represents to the City of New York that the attached Certificate of Insurance is accurate in all material respects.

[Name of broker or agent (typewritten)]

[Address of broker or agent (typewritten)]

[Email address of broker or agent (typewritten)]

[Phone number/Fax number of broker or agent (typewritten)]

[Signature of authorized official or broker or agent]

[Name and title of authorized official, broker or agent (typewritten)]

State of)
) ss:
County of)

Sworn to before me this
_____ day of _____, 20__

NOTARY PUBLIC FOR THE STATE OF _____

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART IV. Address of Commissioner

Wherever reference is made in Article 7 or Article 22 to documents to be sent to the **Commissioner** (e.g., notices, filings, or submissions), such documents shall be sent to the address set forth below or, in the absence of such address, to the **Commissioner's** address as provided elsewhere in this **Contract**.

ACCO's Office, Insurance Unit

30-30 Thomson Avenue, 4th Floor

Long Island City, New York 11101

SCHEDULE B

Guarantees and Warranties

(Reference: Section 01 7839, Article 2.7 of the DDC Standard General Conditions)

GUARANTY FROM CONTRACTOR

(1) **Contractor's Guaranty Obligation:** The Contractor shall promptly repair, replace, restore or rebuild, as the Commissioner may determine, any finished Work in which defects of materials or workmanship may appear or to which damage may occur because of such defects, during the one (1) year period subsequent to the date of Substantial Completion (or use and occupancy in accordance with the Contract), except for the areas of Work set forth below:

- Roofing, Waterproofing, and Joint Sealant Work. For these types of work, the guarantee period shall be (2) two years.
- Trees and/or Plant Material. For trees and/or plant material furnished and installed, the guarantee period shall be (2) two years. During the guarantee period, the Contractor shall provide all maintenance services set forth in the Specifications.

(2) **Guaranty Period:** The obligation of the Contractor, and its Surety under the Performance Bond, is limited to the period(s) of time specified above.

(3) **Other Provisions Deemed Deleted:** In the event the Specifications and/or the Contract Drawings contain any provisions regarding guaranty requirements, such provisions are deemed deleted and replaced with the guaranty requirements set forth in this Schedule B.

WARRANTY FROM MANUFACTURER

(1) **Contractor's Obligation to Provide Warranties:** The items of material and/or equipment for which manufacturer warranties are required are listed below. For each item of material and/or equipment listed below, the Contractor shall obtain a written warranty from the manufacturer. Such warranty shall provide that the material or equipment is free from defects for the period set forth below and will be replaced or repaired within such specified period. The Contractor shall deliver all required warranties to the Commissioner.

(2) **Required Warranties:**

Specification Number	Material or Equipment	Warranty Period
07 51 00	Built-Up Roofing	20 years
07 92 00	Silicone Sealants	20 years
07 92 00	Polyurethane or Silicone	5 years
08 11 02	Steel Doors and Frames	1 year
08 11 16	Aluminum Doors and Frames	1 year
08 71 00	Finish Hardware	1 year
22 14 29	Sump Pump, Submersible	5 years
22 33 01	Domestic Water Heater (Glass Lined Tank)	3 years

22 44 53	Pumps	5 years
23 05 01	General Equipment, Workmanship, Material	1 year
23 09 23	Temperature Control System	1 year (48 hours repair period)
23 21 23	Hydronic Pumps	5 years
23 33 13	Dampers (Actuator)	5 years
23 34 00	Centrifugal Fans	2 years
23 52 23	Cast Iron Boiler	10 years
23 52 24	Fuel Burning Equipment Burner	1 years 2 year
23 63 13	Air Cooled Condensing Unit	2 years (5 years compressor)
23 73 13	Air Handling Units	2 years
23 81 06	Packaged Rooftop Unit Refrigeration Compressors	2 years 5 years
26 05 01	General provisions for Electrical Work	5 Years
26 24 19	Motors, Starters and Control Equipment	5 years
31 23 43	EPS Geofoam	10 years

(3) **Application:** The obligations under the warranty for the periods specified above shall apply only to the manufacturer of the material or equipment, and not to the Contractor or its Surety; provided, however, the Contractor retains responsibility for obtaining all required warranties from the manufacturers and delivering the same to the Commissioner.

(4) **Other Provisions:** The warranty requirements set forth in this Schedule B are also included in the Specifications.

- (a) In the event of any conflict between a warranty requirement set forth in the Specifications and a warranty requirement set forth in Schedule B, the warranty requirement set forth in Schedule B shall take precedence.
- (b) In the event a warranty requirement set forth in the Specifications is omitted from Schedule B, such omission from Schedule B shall have no effect and the Contractor's obligation to provide the manufacturer's warranty, as set forth in the Specifications, shall remain in full force and effect
- (c) In the event a warranty requirement for a particular item of material or equipment is omitted from both Schedule B and the Specifications, and the manufacturer of such item actually provides a warranty, the Contractor shall be obligated to obtain and deliver to the Commissioner the highest level of warranty actually provided by that manufacturer.
- (d) In the event a warranty requirement is provided for a particular item of material or equipment, and such requirement specifies a warranty period that is longer than that which is actually provided by any of the specified manufacturers, the Contractor shall be obligated to obtain and deliver to the Commissioner the highest level of warranty actually provided by any of the specified manufacturers,

unless otherwise directed in writing by the Commissioner.

- (e) Unless indicated otherwise Warranties are to take effect on the date of Substantial Completion.

SCHEDULE C

Contract Drawings

(Reference: Section 01 1000, Article 1.5 (A) of the DDC Standard General Conditions)

The Schedule set forth below lists all Contract Drawings for the Project.

	1. <u>HARLEM SCHOOL OF ARTS:</u>
T-001.00	TITLE SHEET
	<u>ARCHITECTURAL DRAWINGS</u>
DM-001.00	FIRST FLOOR PLAN DEMOLITION
DM-002.00	SECOND FLOOR PLAN DEMOLITION
DM-003.00	DEMOLITION. ROOF OVER 2 ND FL.
DM-004.00	FIRST FLOOR PLAN DEMOLITION
A-001.00	FIRST FLOOR PLAN
A-002.00	SECOND FLOOR PLAN
A-003.00	ROOF OVER 2 ND FL. AND 3 RD FL. PLAN
A-004.00	EAST ELEVATION, SECTION, AND HAND RAILS VIEW
A-005.00	ENLARGED PLANS
A-006.00	SECTIONS AND DETAILS
A-007.00	SECTIONS AND DETAILS
A-008.00	SECTIONS AND DETAILS
A-009.00	PARTITION DETAILS
A-010.00	DOOR AND WINDOW SCHEDULES
A-011.00	ELEVATOR CAB – INTERIOR FINISH
A-012.00	Not Used
A-013.00	TOILET PLANS AND ELEVATIONS
A-101.00	NEW ELEVATOR PLAN AND SECTION
	<u>STRUCTURAL DRAWINGS</u>
S-001.00	GENERAL AND STRUCTURAL NOTES
DM-004.00	FIRST FLOOR PLAN DEMOLITION
DM-005.00	SECOND FLOOR PLAN DEMOLITION
DM-006.00	DEMOLITION ROOF OVER 2 ND FL.
S-002.00	FIRST FLOOR PLAN
S-003.00	SECOND FLOOR PLAN
S-004.00	ROOF OVER 2 ND FL. AND 3 RD FL. PLAN
S-005.00	SECTIONS AND DETAILS
S-006.00	SECTIONS AND DETAILS
S-007.00	ACOUSTICAL BARRIERS. PLANS AND ELEVATIONS.
S-008.00	ACOUSTICAL BARRIERS. SECTION AND DETAILS
S-009.00	ACOUSTICAL BARRIERS. ROOF PENETRATIONS AND CURB SUPPORTS

	<u>MECHANICAL DRAWINGS</u>
EN-001.00	ECCC-NYS COMPLIANCE -COMCHECK
EN-002	ECCC-NYS COMPLIANCE -COMCHECK
M-001.00	MECHANICAL NOTES, SYMBOLS LIST AND ABBREVIATIONS
DM-007.00	HVAC - DEMOLITION BASEMENT AND BOILER ROOM PLANS
DM-008.00	HVAC - DEMOLITION FIRST FLOOR PLAN
DM-009.00	HVAC - DEMOLITION SECOND FLOOR PLAN
DM-010.00	HVAC - DEMOLITION ROOF / 3RD FLOOR PLAN
M-002.00	HVAC - CELLAR, BOILER ROOM AND UPPER ROOF PLANS
M-003.00	HVAC - FIRST FLOOR PLAN
M-004.00	HVAC - SECOND FLOOR PLAN
M-005.00	HVAC - THIRD FLOOR PLAN
M-006.00	HVAC - DETAILS
M-007.00	HVAC - DETAILS
M-008.00	HVAC - CONTROL SCHEMATICS
M-009.00	HVAC - EQUIPMENT SCHEDULES
	<u>PLUMBING DRAWINGS</u>
P-001.00	PLUMBING NOTES, SYMBOLS LIST AND ABBREVIATIONS
DM-011.00	PLUMBING DEMOLITION FIRST FLOOR PLAN
DM-012.00	PLUMBING DEMOLITION SECOND FLOOR PLAN
DM-013.00	PLUMBING DEMOLITION THIRD FLOOR PLAN
P-002.00	PLUMBING FIRST FLOOR PLAN
P-003.00	PLUMBING SECOND FLOOR PLAN
P-003.A.00	A.D.A. TOILET ROOM ENLARGED PLANS AND RISERS.
P-004.00	PLUMBING THIRD FLOOR AND ROOF PLAN
	<u>ELECTRICAL DRAWINGS</u>
E-001.00	ELECTRICAL NOTES, SYMBOLS LIST AND ABBREVIATIONS
DM-014.00	ELECTRICAL 1ST, 2ND AND 3RD FLOOR PLANS - DEMOLITION
DM-015.00	ELECTRICAL POWER RISER DEMOLITION
E-002.00	ELECTRICAL - CELLAR AND 1ST FLOOR PLANS
E-003.00	ELECTRICAL - 2ND, 3RD FLOORS AND ROOF PLANS
E-004.00	ELECTRICAL - ELEVATOR DETAILS
E-005.00	ELECTRICAL - RISER DIAGRAM
E-006.00	ELECTRICAL - SCHEDULES
E-007.00	ELECTRICAL - DETAILS
	<u>FIRE ALARM</u>
FA-001.00	FIRE ALARM- NOTES, SYMBOLS, AND ABBREVIATIONS
FP-002.00	FIRE ALARM- CELLAR AND FIRST FLOOR PLANSPLAN
FP-003.00	FIRE ALARM- SECOND, THIRD AND ROOF PART PLANS

SCHEDULE D

Electrical Motor Control Equipment

(Reference: 01 3506, Article 3.8 of the DDC Standard General Conditions)

Requirements for electrical motor equipment may be included in one or more sections of the Specifications for the Contract for the Project. Schedule D set forth below delineates specific information for electrical motor control equipment. In the event of any conflict between the Specifications and this Schedule D, Schedule D shall take precedence; provided, however, in the event of an omission from Schedule D (i.e., Schedule D omits either a reference to or information concerning electrical motor equipment which is set forth in the Specifications), such omission from Schedule D shall have no effect and the Contractor's obligation with respect to the electrical motor control equipment, as set forth in the Specifications, shall remain in full force and effect.

DB Disconnect Circuit Breaker (Switch)	P Pilot Light	BG Break Glass Station
TS Thermal Switch	F Firestat	HOA Hand-Off Auto.
MS Magnetic Starter	T Thermostat	PB Push Button Station
CMS Comb. Mag. Starter	AL Alternator	RO Remote "off"

Equip. Ident.	Location	# of Units	HP or KW	Volts and Phase	Control Type: See legend above	Remarks:
ELEVATOR	EMR, 1 ST FLOOR	1	30HP	208V, 3 Ph	CMS	
HVAC-2	ROOF	1	54.93 KW	208V, 3 Ph	DS	
HVAC-3	ROOF	1	38.88 KW	208V, 3 Ph	DS	
HVAC-4	ROOF	1	88.15 KW	208V, 3 Ph	DS	
HVAC-5	ROOF	1	7.97 KW	208V, 3 Ph	DS	
AHU-1	EMR, 1 ST FLOOR	1	0.035 KW	208V, 1 Ph	DS	
ACCU-1	ROOF	1	2.46 KW	208V, 1 Ph	DS	
P-1, P-2	Boiler Room, 3 rd FLOOR	1+1	3 HP	208V, 3 Ph	DS/VSD	Lead-Lag Pkg
RP-1	Boiler Room, 3 rd FLOOR	1	1/6 HP	120V, 1 Ph	MS	

CP-1	EMR, 1 ST FLOOR	1	1/30 HP	208V, 1 Ph	DS	
SP-1	ELEVATOR, PIT	1	1/3 HP	120V, 1 Ph	DS	
EF-1	ELEVATOR, ROOF	1	0.25 HP	120V, 1 Ph	DS	
BOILER	Boiler Room, 3 rd FLOOR	1	1	120V, 1 Ph	BG	

SCHEDULE E

Separation of Trades

NOT USED FOR SINGLE CONTRACTS

SCHEDULE F

Submittals Schedule

(Reference: Section 01 3300 Article 1.5 (C) of the General Conditions)

The Schedule set forth below lists all submittal requirements for the Contract. In the event of any conflict between the Specifications and this Schedule F, Schedule F shall take precedence; provided, however, in the event of an omission from Schedule F (i.e., Schedule F omits either a reference to or information concerning a submittal requirement which is set forth in the Specifications), such omission from Schedule F shall have no effect and the Contractor's submittal obligation, as set forth in the Specifications, shall remain in full force and effect.

CONSULTANT:
TELEPHONE NUMBER:
DDC PROJECT MANAGER:
TELEPHONE NUMBER:

DATE: _____
APPROVED: _____
(DDC RESIDENT ENGINEER/CPM)

REPORT DATE	SPEC. SECT. #	DESCRIPTION	FMS ID #/PROJECT ID #/ CONTRACT REGISTRATION #/ PROJECT NAME:	COORD. WITH CONTR.	SUBMITTAL			FABRIC. TIME	CONTRACT # Contract 1 - GENERAL CONSTRUCTION									
					SHOP DWG.	SAMPLE	CAT CUTS		REQ'D DEL.	SUB. DATE	SUBMISSIONS							
									REC'D	RET'D	ACTION	REC'D	RET'D	ACTION	REC'D	RET'D	ACTION	
	01 3526	Safety and Health Program		X														
	01 3526	Contractor's Safety Plan		X														
	01 3526	Historic Treatment Plan		X														
	01 5000	Site Plan						X										
	01 5000	Reports		X														
	01 5423	NYC DOB Scaffold & Sidewalk Shed Permits		X				X										
	01 5423	Site Logistics/Site Safety Plan		X														

HIRING AND EMPLOYMENT RIDER:
HIRENYC AND REPORTING REQUIREMENTS

Introduction

This Rider shall apply to all contracts for goods, services, and construction with a value of one million dollars (\$1,000,000.00) or more, provided, however, that certain requirements of the Rider shall only apply as indicated below. This Rider addresses the HireNYC process, including reporting obligations under the HireNYC process, and certain other reporting requirements imposed by law. In general, the HireNYC process under this Rider requires the Contractor to enroll with the HireNYC portal for the City of New York ("the City") found within the Department of Small Business Services's ("SBS") website, to disclose all entry to mid-level job opportunities described in this Rider arising from this contract and located in New York City, and to agree to interview qualified candidates from HireNYC for those opportunities.

HireNYC Requirements

A. Enrollment

The Contractor shall enroll with the HireNYC system, found at www.nyc.gov/sbs, within thirty (30) days after the registration of this Contract pursuant to Section 328 of the New York City Charter. The Contractor shall provide information about the business, designate a primary contact and say whether it intends to hire for any entry to mid-level job opportunities arising from this contract and located in New York City, and, if so, the approximate start date of the first hire.

B. Job Posting Requirements

Once enrolled in HireNYC, the Contractor agrees to update the HireNYC portal with all entry to mid-level job opportunities arising from this contract and located in New York City, if any, which shall be defined as jobs requiring no more than an associate degree, as provided by the New York State Department of Labor (see Column F of <https://labor.ny.gov/stats/2012-2022-NYS-Employment-Prospects.xls>). The information to be updated includes the types of entry and mid-level positions made available from the work arising from the contract and located in New York City, the number of positions, the anticipated schedule of initiating the hiring process for these positions, and the contact information for the Contractor's representative charged with overseeing hiring. The Contractor must update the HireNYC portal with any hiring needs arising from the contract and located in New York City, and the requirements of the jobs to be filled, no less than three weeks prior to the intended first day of employment for each new position, except with the permission of SBS, not to be unreasonably withheld, and must also update the HireNYC portal as set forth below.

After enrollment through HireNYC and submission of relevant information, SBS will work with the Contractor to develop a recruitment plan which will outline the candidate screening process,

and will provide clear instructions as to when, where, and how interviews will take place. HireNYC will screen applicants based on employer requirements and refer applicants whom it believes are qualified to the Contractor for interviews. The Contractor must interview referred applicants whom it believes are qualified.

After completing an interview of a candidate referred by HireNYC, the Contractor must provide feedback via the portal within twenty (20) business days to indicate which candidates were interviewed and hired, if any. In addition, the Contractor shall provide the start date of new hires, and additional information reasonably related to such hires, within twenty (20) business days after the start date. In the event the Contractor does not have any job openings covered by this Rider in any given year, the Contractor shall be required to provide an annual update to HireNYC to that effect. For this purpose, the reporting year shall run from the date of the registration of the contract and each anniversary date.

These requirements do not limit the Contractor's ability to assess the qualifications of prospective workers, and to make final hiring and retention decisions. No provision of this Rider shall be interpreted so as to require the Contractor to employ any particular worker.

In addition, the provisions of this Rider shall not apply to positions that the Contractor intends to fill with employees employed pursuant to the job retention provision of Section 22-505 of the Administrative Code of the City of New York. The Contractor shall not be required to report such openings with HireNYC. However, the Contractor shall enroll with the HireNYC system pursuant to Section A, above, and, if such positions subsequently become open, then the remaining provisions of this Rider will apply.

C. Breach and Liquidated Damages

If the Contractor fails to comply with the terms of the contract and this Rider (1) by not enrolling its business with HireNYC; (2) by not informing HireNYC, as required, of open positions; or (3) by failing to interview a qualified candidate, the contracting agency may assess liquidated damages in the amount of two-thousand five hundred dollars (\$2,500.00) per breach. For all other events of noncompliance with the terms of this Rider, the agency may assess liquidated damages in the amount of five hundred dollars (\$500) per breach.

Furthermore, in the event the Contractor breaches the requirements of this Rider during the term of the contract, the City may hold the Contractor in default of this contract.

Audit Compliance

In addition to the auditing requirements set forth in other parts of the contract, the Contractor shall permit SBS and the City to inspect any and all records concerning or relating to job openings or the hiring of individuals for work arising from the contract and located in New York City. The Contractor shall permit an inspection within seven (7) business days of the request.

Other Reporting Requirements

The Contractor shall report to the City, on a monthly basis, all information reasonably requested by the City that is necessary for the City to comply with any reporting requirements imposed by law or rule, including any requirement that the City maintain a publicly accessible database. In addition, the Contractor agrees to comply with all reporting requirements imposed by law or rule, or as otherwise requested by the City.

Construction Requirements

Construction contractors shall comply with the HireNYC requirements set forth above for all non-trades jobs (e.g., for an administrative position arising out of the work of the contract and located in New York City) as set forth above.

In addition, construction contractors shall reasonably cooperate with SBS and the City on specific outreach events, including Hire on the Spot events, for the hiring of trades workers for the work of this contract.

Further, this contract shall be subject to a project labor agreement if so required elsewhere in this contract.

Federal Hiring Requirements

The Contractor shall comply with all federal hiring requirements as may be set forth elsewhere in this contract, including, as applicable:

- Section 3 of the HUD Act of 1968, which requires, to the greatest extent feasible, economic opportunities for 30 percent of new hires be given to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing.
- Executive Order 11246, which prohibits discrimination in employment due to race, color, religion, sex or national origin, and requires the implementation of goals for minority and female participation for work involving any Construction trade.

PAID SICK LEAVE LAW CONTRACT RIDER

Introduction and General Provisions

The Earned Sick Time Act, also known as the Paid Sick Leave Law ("PSLL"), requires covered employees who annually perform more than 80 hours of work in New York City to be provided with paid sick time.¹ Contractors of the City of New York or of other governmental entities may be required to provide sick time pursuant to the PSLL.

The PSLL became effective on April 1, 2014, and is codified at Title 20, Chapter 8, of the New York City Administrative Code. It is administered by the City's Department of Consumer Affairs ("DCA"); DCA's rules promulgated under the PSLL are codified at Chapter 7 of Title 6 of the Rules of the City of New York ("Rules").

Contractor agrees to comply in all respects with the PSLL and the Rules, and as amended, if applicable, in the performance of this agreement. Contractor further acknowledges that such compliance is a material term of this agreement and that failure to comply with the PSLL in performance of this agreement may result in its termination.

Contractor must notify the Agency Chief Contracting Officer of the City agency or other entity with whom it is contracting in writing within ten (10) days of receipt of a complaint (whether oral or written) regarding the PSLL involving the performance of this agreement. Additionally, Contractor must cooperate with DCA's education efforts and must comply with DCA's subpoenas and other document demands as set forth in the PSLL and Rules.

The PSLL is summarized below for the convenience of Contractor. Contractor is advised to review the PSLL and Rules in their entirety. On the website www.nyc.gov/PaidSickLeave there are links to the PSLL and the associated Rules as well as additional resources for employers, such as Frequently Asked Questions, timekeeping tools and model forms, and an event calendar of upcoming presentations and webinars at which Contractor can get more information about how to comply with the PSLL. Contractor acknowledges that it is responsible for compliance with the PSLL notwithstanding any inconsistent language contained herein.

Pursuant to the PSLL and the Rules:

Applicability, Accrual, and Use

An employee who works within the City of New York for more than eighty hours in any consecutive 12-month period designated by the employer as its "calendar year" pursuant to the PSLL ("Year") must be provided sick time. Employers must provide a minimum of one hour of sick time for every 30 hours worked by an employee and compensation for such sick time must

¹ Pursuant to the PSLL, if fewer than five employees work for the same employer, as determined pursuant to New York City Administrative Code §20-912(g), such employer has the option of providing such employees uncompensated sick time.

be provided at the greater of the employee's regular hourly rate or the minimum wage. Employers are not required to provide more than forty hours of sick time to an employee in any Year.

An employee has the right to determine how much sick time he or she will use, provided that employers may set a reasonable minimum increment for the use of sick time not to exceed four hours per day. In addition, an employee may carry over up to forty hours of unused sick time to the following Year, provided that no employer is required to allow the use of more than forty hours of sick time in a Year or carry over unused paid sick time if the employee is paid for such unused sick time and the employer provides the employee with at least the legally required amount of paid sick time for such employee for the immediately subsequent Year on the first day of such Year.

An employee entitled to sick time pursuant to the PSLL may use sick time for any of the following:

- such employee's mental illness, physical illness, injury, or health condition or the care of such illness, injury, or condition or such employee's need for medical diagnosis or preventive medical care;
- such employee's care of a family member (an employee's child, spouse, domestic partner, parent, sibling, grandchild or grandparent, or the child or parent of an employee's spouse or domestic partner) who has a mental illness, physical illness, injury or health condition or who has a need for medical diagnosis or preventive medical care;
- closure of such employee's place of business by order of a public official due to a public health emergency; or
- such employee's need to care for a child whose school or childcare provider has been closed due to a public health emergency.

An employer must not require an employee, as a condition of taking sick time, to search for a replacement. However, an employer may require an employee to provide: reasonable notice of the need to use sick time; reasonable documentation that the use of sick time was needed for a reason above if for an absence of more than three consecutive work days; and/or written confirmation that an employee used sick time pursuant to the PSLL. However, an employer may not require documentation specifying the nature of a medical condition or otherwise require disclosure of the details of a medical condition as a condition of providing sick time and health information obtained solely due to an employee's use of sick time pursuant to the PSLL must be treated by the employer as confidential.

If an employer chooses to impose any permissible discretionary requirement as a condition of using sick time, it must provide to all employees a written policy containing those requirements, using a delivery method that reasonably ensures that employees receive the policy. If such employer has not provided its written policy, it may not deny sick time to an employee because of non-compliance with such a policy.

Sick time to which an employee is entitled must be paid no later than the payday for the next regular payroll period beginning after the sick time was used.

Exemptions and Exceptions

Notwithstanding the above, the PSSL does not apply to any of the following:

- an independent contractor who does not meet the definition of employee under section 190(2) of the New York State Labor Law;
- an employee covered by a valid collective bargaining agreement in effect on April 1, 2014 until the termination of such agreement;
- an employee in the construction or grocery industry covered by a valid collective bargaining agreement if the provisions of the PSSL are expressly waived in such collective bargaining agreement;
- an employee covered by another valid collective bargaining agreement if such provisions are expressly waived in such agreement and such agreement provides a benefit comparable to that provided by the PSSL for such employee;
- an audiologist, occupational therapist, physical therapist, or speech language pathologist who is licensed by the New York State Department of Education and who calls in for work assignments at will, determines his or her own schedule, has the ability to reject or accept any assignment referred to him or her, and is paid an average hourly wage that is at least four times the federal minimum wage;
- an employee in a work study program under Section 2753 of Chapter 42 of the United States Code;
- an employee whose work is compensated by a qualified scholarship program as that term is defined in the Internal Revenue Code, Section 117 of Chapter 20 of the United States Code; or
- a participant in a Work Experience Program (WEP) under section 336-c of the New York State Social Services Law.

Retaliation Prohibited

An employer may not threaten or engage in retaliation against an employee for exercising or attempting in good faith to exercise any right provided by the PSSL. In addition, an employer may not interfere with any investigation, proceeding, or hearing pursuant to the PSSL.

Notice of Rights

An employer must provide its employees with written notice of their rights pursuant to the PSSL. Such notice must be in English and the primary language spoken by an employee, provided that DCA has made available a translation into such language. Downloadable notices are available on DCA's website at <http://www.nyc.gov/html/dca/html/law/PaidSickLeave.shtml>.

Any person or entity that willfully violates these notice requirements is subject to a civil penalty in an amount not to exceed fifty dollars for each employee who was not given appropriate notice.

Records

An employer must retain records documenting its compliance with the PSSL for a period of at least three years, and must allow DCA to access such records in furtherance of an investigation related to an alleged violation of the PSSL.

Enforcement and Penalties

Upon receiving a complaint alleging a violation of the PSSL, DCA has the right to investigate such complaint and attempt to resolve it through mediation. Within 30 days of written notification of a complaint by DCA, or sooner in certain circumstances, the employer must provide DCA with a written response and such other information as DCA may request. If DCA believes that a violation of the PSSL has occurred, it has the right to issue a notice of violation to the employer.

DCA has the power to grant an employee or former employee all appropriate relief as set forth in New York City Administrative Code 20-924(d). Such relief may include, among other remedies, treble damages for the wages that should have been paid, damages for unlawful retaliation, and damages and reinstatement for unlawful discharge. In addition, DCA may impose on an employer found to have violated the PSSL civil penalties not to exceed \$500 for a first violation, \$750 for a second violation within two years of the first violation, and \$1,000 for each succeeding violation within two years of the previous violation.

More Generous Policies and Other Legal Requirements

Nothing in the PSSL is intended to discourage, prohibit, diminish, or impair the adoption or retention of a more generous sick time policy, or the obligation of an employer to comply with any contract, collective bargaining agreement, employment benefit plan or other agreement providing more generous sick time. The PSSL provides minimum requirements pertaining to sick time and does not preempt, limit or otherwise affect the applicability of any other law, regulation, rule, requirement, policy or standard that provides for greater accrual or use by employees of sick leave or time, whether paid or unpaid, or that extends other protections to employees. The PSSL may not be construed as creating or imposing any requirement in conflict with any federal or state law, rule or regulation.

DDC PROJECT #: PV181HSA2

PROJECT NAME: Harlem School of the Arts, Phase II Building Renovations.

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

No.	Bidders Questions	DDC Responses
1	Please provide the name and contact information for the existing building BMS Controls vendor.	The existing building BMS Controls vendor is listed below: Trane New York Contact: Adam Rodriguez Area Service Manager Ingersoll Rand Climate Control Technologies 45-18 Court Square, Suite 100 Long Island City, New York 11101 Office 718.269.3623 Mobile 917.681.9668

THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

November 17, 2015

ADDENDUM No. # 3

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

PV181HSA2

Harlem School of the Arts, Phase II Building Renovations

This addendum is issued for the purpose of amending the requirements of the Bid and Contract Documents and is hereby made a part of said Bid and Contract Documents to the same extent as though it were originally included therein.

The bidder is advised that the items listed below apply to the project:

1. **Questions from Bidders and Responses to Questions:**
See Attachment A.

THIS ADDENDUM MUST BE SIGNED BY ALL BIDDERS AND ATTACHED TO THEIR BIDS.

If additional information is required, please contact the Department of Design and Construction, Contract Section at (718) 391-3170, (718) 391-1016, or by fax at (718) 391-2615.



Michael Nastasi
Assistant Commissioner
Cultural/ Parks Programs

Name of Bidder

By: _____

DDC PROJECT #: PV181HSA2

PROJECT NAME: Harlem School of the Arts, Phase II Building Renovations.

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

No.	Bidders Questions	DDC Responses
1	Sprinkler specification sections 210301 & 211313 are provided but no Sprinkler drawings? Please clarify.	Sprinkler pipes are shown on drawings P-002.00 and P-003A.00. In accordance with DOB requirements, sprinkler system for less than 30 Sprinkler heads can be connected to the domestic water supply and filed as Plumbing. However the system shall comply with requirements specified in specification sections 210301 and 211313.



NEW YORK CITY DEPARTMENT OF
DESIGN + CONSTRUCTION

THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

ADDENDUM TO THE GENERAL CONDITIONS
FOR SINGLE CONTRACT PROJECTS

The General Conditions are hereby amended in accordance
with the terms and conditions set forth in this Addendum.

I. PROJECT DESCRIPTION

FMS #: PV181HSA2

PROJECT NAME: HARLEM SCHOOL OF THE ARTS, PHASE II BUILDING RENOVATIONS

PROJECT DESCRIPTION: This Project consists of upgrade of the existing facility which will include the rehabilitation of the main entrance to achieve barrier free accessibility, creation of a barrier free restroom on the second floor, installation of a new elevator to serve the first, second, and third floors, replacing the boiler and hot water systems, new central air-conditioning units, modification of existing air- distribution system, and provide additional electrical outlets in the "G Space" to be used for portable sound and lighting devices.

PROJECT LOCATION: 645 St Nicholas Avenue
BOROUGH: Manhattan
CITY OF NEW YORK
ZIP CODE: 10031
COMMUNITY BOARD #: 109

LANDMARK STATUS:

DESIGNATED LANDMARK STRUCTURE OR SITE: **NO**

LANDMARK QUALITY STRUCTURE: **NO**

II. LEED GREEN BUILDING REQUIREMENTS

Not Used.

III. COMMISSIONING REQUIREMENTS

Not Used

IV. PROJECT MANAGEMENT

- DDC shall publicly bid and enter into all contracts for the Project. DDC shall manage the Project using its own personnel.
- DDC shall publicly bid and enter into all contracts for the Project. A Construction Management firm (the "CM") hired by DDC shall manage the Project. The Contractor is advised that the CM shall serve as the representative of the Commissioner at the site and shall, subject to review by the Commissioner, be responsible for the inspection, management, coordination and administration of the required construction work, as delineated in the article of the Standard Construction Contract entitled "The Resident Engineer".

V. CONTRACTS FOR THE PROJECT

The Project consists of a single contract, the Contract for General Construction Work. The Contractor for General Construction Work is responsible for the performance of all required work for the Project as set forth in the Contract Documents (General Conditions, Drawings and Specifications), including all responsibilities and obligations assigned to separate Contractors for the following subdivisions of the work: Plumbing Work, HVAC Work, and Electrical Work. All responsibilities and obligations in the Contract Documents assigned to separate Contractors for such subdivisions of the work are the responsibility of the Contractor for General Construction Work.

The separate Contracts pertaining to this Project are set forth below:

Contract No. 1 - Contract for General Construction Work

VI. SCHEDULES

The Contractor is advised that Schedules A through F are attached to, and incorporated as part of, this Addendum to the General Conditions. These schedules contain important information that is specific to this Project. The Contractor is advised to carefully review these schedules.

VII. APPLICABILITY OF SECTIONS/SUB-SECTIONS AND AMENDED SUB-SECTIONS

The Contractor is advised that various Sections/Sub-Sections in the General Conditions may not apply to this Project or may apply as amended. Such Sections/Sub-Sections advise the Contractor to "Refer to the Addendum for the applicability of this Section/Sub-Section." Such Sections/Sub-Sections are set forth below. A check mark indicates whether the Section/Sub-Section (1) applies to the Project, (2) does not apply to the Project, or (3) applies to the Project as amended. If no box is checked, the Section/Sub-Section, as set forth in the General Conditions, applies to the Project. Amended Sections/Sub-Sections, if any, are set forth following this list of Sections.

<u>Section</u>	<u>Sub-Section</u>	<u>Sub-Section</u>	<u>Applies</u>	<u>Does not Apply</u>	<u>Applies as Amended</u>
1 1000	1.4 (B)	Scope and Intent / LEED		x	
	1.4(C)	Scope and Intent / Commissioning		x	
01 3233		Photographic Documentation		x	
01 3300	1.7 (A-D)	LEED Submittals		x	
01 3503		General Mechanical Requirements	x		
01 3506	3.2 (A-B)	Electrical Conduit System Including Boxes (Pull, Junction and Outlet)	x		
	3.3 (A-E)	Electrical Wiring Devices	x		
	3.4 (A-I)	Electrical Conductors and Terminations	x		
	3.5 (A-B)	Circuit Protective Devices	x		
	3.6 (A-J)	Distribution Centers	x		
	3.7 (A-I)	Motors	x		
	3.8 (A-I)	Motor Control Equipment	x		
01 3591		Historic Treatment Procedures		x	
01 5000	3.2 (A)	Temporary Water Facilities / Temporary Water		x	
	3.2 (B)	Temporary Water Facilities / Temporary Water – Work in Existing Facilities	x		
	3.3 (B)	Temporary Sanitary Facilities / Self-Contained Toilet Units		x	
	3.3 (C)	Temporary Sanitary Facilities / Existing Toilets	x		
	3.4 (B) 1	Temporary Power, Lighting, and Site Lighting / Connection to Utility Lines		x	

<u>Section</u>	<u>Sub-Section</u>	<u>Sub-Section</u>	<u>Applies</u>	<u>Does not Apply</u>	<u>Applies as Amended</u>
01 5000	3.4 (B) 2	Temporary Power, Lighting, and Site Lighting / Connection to Existing Electrical Power Service	x		
	3.4 (B) 3	Temporary Power, Lighting, and Site Lighting / Electrical Generator Power Service		x	
	3.4 (D)	Temporary Power, Lighting, and Site Lighting / Temporary Lighting		x	
	3.4 (E)	Temporary Power, Lighting, and Site Lighting / Site Security Lighting (for New Construction Only)		x	
	3.5 (A-J)	Temporary Heat	x		
	3.8 (A)	DDC Field Office / Office Space in Existing Building		x	
	3.8 (B)	DDC Field Office / DDC Field Office Trailer	x		
	3.8 (B-3a)	DDC Field Office / DDC Managed Field Office Trailer		x	
	3.8 (B-3b)	DDC Field Office / CM Managed Field Office Trailer		x	
	3.8 (D)	DDC Field Office / Additional Equipment for the DDC Field Office	x		
	3.13(A-D)	Work Fence Enclosure		x	
	3.17(B)	Project Rendering		x	
	3.18 (A-C)	Security Guards / Fire Guards on Site		x	
01 5411	3.1 (A-J)	Temporary Use, Operation and Maintenance of Elevators During Construction for New Buildings Up To and Including 15 Stories		x	
	3.2 (A-M)	Temporary Use, Operation and Maintenance of Elevators During Construction for New Buildings Over 15 Stories		x	
	3.3 (A-E)	Temporary Use, Operation and Maintenance of Elevators During Construction for Existing Buildings		x	
01 7300	3.3 (A-I)	Surveys			x
	3.4 (A-B)	Borings		x	
	3.12 (A-D)	Sleeves and Hangers	x		
	3.13 (A)	Sleeve and Penetration Drawings	x		
	3.15 (A)	Location of Partitions	x		
01 7419	1.5 (C)	Waste Management Performance Requirements / LEED Certification		x	
01 7900		Demonstration and Owner's Pre-Acceptance Orientation	x		
01 8113		Sustainable Design Requirements for LEED Buildings		x	
01 8113.13		VOC Limits for Adhesives, Sealants, Paints and Coatings for LEED Buildings		x	
01 8119		Indoor Air Quality Requirements for LEED Buildings		x	
01 9113		General Commissioning Requirements	x		

AMENDED SECTIONS/SUB-SECTIONS

The Contractor is advised that the amended Sub-Sections set forth below are included in the General Conditions and apply to the Project.

1. Section 017300 Execution, Articles 3.3 A thru D are not applicable for this project. Applicable Articles are 3.3 E thru I.

ADDITIONAL SECTION/SUB-SECTIONS

PROJECT WORKING HOURS

- A. The Contractor shall establish the work hours for the project within the parameters set forth by the City of New York Department of Buildings, the Department of Environmental Protection, and other agencies having such jurisdiction. Provide the Commissioner with a schedule of the intended hours in order for it to set its personnel schedule.
- B. No overtime work shall be performed without prior written approval by the Commissioner.
- C. When performing work during "After hours" periods as determined by the NYC Building Department, obtain and pay for all required permits.
- D. The Harlem School of The Arts (HSA) will remain open during construction. Construction activities shall be performed between 7:00 AM and 3:00 PM, Monday to Friday. All areas must be swept and cleaned by 3:00pm. All contractors and workers must exit HSA property by 3:15pm.

CONTRACTOR GUIDELINES

- A. Construction Progress Meetings shall be as per General Conditions Section 013100 Project Management and Coordination.
- B. Appointed construction supervisor must be onsite at all times while construction workers are in the building.
- C. Construction materials may not be left in front of the main entrance or in courtyard. The building's main entrance may not be used for deliveries.
- D. Debris may not be left in front of the building. All dumpsters related to construction must be arranged and supervised by construction supervisor.
- E. Dust Control as per General Conditions Section 011000 Summary.
- F. All contractors and workers must sign in and out daily.
- G. Egress from the building must be clearly defined and adhere to current NYC Fire Department and Department of Building codes during construction.

PHASING

A. Order of Work:

1. To complete all the work of all Trades within the required Contract Duration, and to accommodate Project needs, the Work of this Contract shall be performed in "Phases" coordinated with HSA and DDC. Prior to commencement of work, General Contractor shall develop a Phasing Plan outlining all major phases of the projects that will be performed consequentially or concurrently, and submit to DDC/HSA for approval.
2. *Order of Work and Phasing Plan shall address the following Priorities:*
 - a. *Boiler Room Renovation (Boiler, Water Heater, Pumps, Piping).*
 - b. *Replacement of HVAC Rooftop Units and Modification to existing ductwork, including replacement of several VAV boxes.*
 - c. *Installation of New Elevator.*
 - d. *Renovation and installation of ADA-compliant bathroom on the second floor.*
 - e. *Modification of Access Ramp and Entrance Doors.*
3. *Phasing Plan should consider seasonal constraints and Occupancy Level.*

General Contractor and sub-contractors should consider the following Notes and Recommendations:

- a. *Existing hot water distribution systems (boiler, pumps, hot water heater) are not functional. Boiler Room renovation can be performed during any season.*
- b. *Rooftop Units HVAC-2, HVAC-3, HVAC-4, and HVAC-5 provide cooling and heating for main HSA spaces and studios. Replacement of these units shall be well coordinated and performed during the spring or fall. Replacement of these units shall be completed by the beginning of heating season.*
- c. *Installation of the new elevator includes cutting of slabs, underpinning, roof opening and construction of elevator shaft. Slab opening on second floor will require installation of support steel and temporary dust mitigation partitions to allow use of the remaining portion of the Recital Room during the evening hours. Roof opening shall be temporarily protected and waterproofed. Preferable period for installation of elevator shaft is from May to the end of September.*
- d. *ADA-compliant toilet could be constructed during any seasons (subject to approval and coordination with HSA-planned high occupancy events).*
- e. *Renovation to access ramp and entrances will require the use of alternate means of egress. It should be scheduled and coordinated with HSA.*

Contractor Phasing Plan shall address the following:

- *Public safety.*
- *Accessibility to the means of egress.*
- *Safe access by occupants to the working place or visiting destination.*
- *As minimal as possible, interruption of the daily activities of HSA staff without compromising their safety.*
- *Minimum interruption of utility services.*

VIII. SPECIAL EXPERIENCE REQUIREMENTS FOR THE PROJECT

Not Used

IX. REVISIONS: SPECIFICATIONS AND CONTRACT DRAWINGS

The Specifications and the Contract Drawings for the Project are revised in accordance with the provisions set forth below.

- (1) Owner: Wherever the term "Owner" is used in the Specifications and/or the Contract Drawings, such term shall mean the City of New York.
- (2) Other Entities: In the event any entity other than the City of New York is referred to or named as the "Owner" in the Specifications and/or the Contract Drawings, the name of such other entity is deemed deleted and replaced with the "City of New York".
- (3) Architect / Engineer: Wherever the words "Architect", "Engineer", "Architect / Engineer" or "Architect and/or Engineer" are used in the Specifications and/or the Contract Drawings, such words are deemed deleted and replaced with the word "Commissioner".
- (4) Products / Manufacturers: Wherever the Specifications and/or the Contract Drawings require the contractor to provide a particular product (i.e., material and/or equipment) from a designated manufacturer and/or vendor, the term "or approved equal" is deemed inserted, even if only one product and/or manufacturer is specified, except as otherwise provided below.
 - (a) Proprietary Items: If the Bid Booklet contains a Notice which identifies a particular product from a designated manufacturer as a "Proprietary Item", the Contractor shall be required to provide such specified product. In such case, no substitution or "approved equal" will be permitted.
- (5) Special Experience Requirements: Special Experience Requirements for the Project, if any, are set forth in the Bid Booklet. Special Experience Requirements may apply to contractors, subcontractors, installers, manufacturers and/or suppliers. If the Specifications and/or the Contract Drawings contain any Special Experience Requirement that is not set forth in the Bid Booklet, such Special Experience Requirement is deemed deleted, except as otherwise provided below.
 - (a) Any Special Experience Requirement that provides that the entity performing the work or supplying the material must have more than three (3) years of experience, is revised to provide that the entity performing the work or supplying the material must have three (3) years of experience, except as described in paragraph (b) below.
 - (b) Any Special Experience Requirement that pertains to the abatement of hazardous materials shall not be subject to the deletion and/or revision set forth above. Such Special Experience Requirement shall remain in full force and effect.
 - (c) Any Special Experience Requirement that provides that the entity performing the work must be licensed, authorized, certified, approved by or acceptable to the manufacturer, is deemed deleted and replaced with the requirement that such entity must be properly trained for the specified work.
 - (d) Any Special Experience Requirement that provides that the individual workers performing the work must be licensed, authorized, certified, approved by or acceptable to the manufacturer, is deemed deleted and replaced with the requirement that such individual workers must be properly trained for the specified work.
- (6) Alternate Bids: If the agency is requesting the submission of Alternate Bids, a Notice regarding such Alternate Bids is set forth in the Bid Booklet. In the event of any conflict or inconsistency between (1) the Notice regarding Alternate Bids set forth in the Bid Booklet and (2) a provision in the Specifications and/or the Contract Drawings regarding Alternate Bids, the Notice set forth in the Bid Booklet shall prevail. If the agency is not requesting the submission of Alternate Bids, as indicated by the absence of a Notice in the Bid Booklet, and the Specifications and/or the Contract Drawings contain any provision regarding Alternate Bids, such provision is deemed deleted.
- (7) Contractor Retained Engineer: If the Specifications and/or the Contract Drawings require the Contractor to retain an Engineer to provide engineering services for the Project, the following sentence is deemed inserted: "Such Engineer must be a Professional Engineer, licensed in the State of New York."

- (8) LEED Related Provisions: If the Specifications and/or the Contract Drawings require the Contractor to purchase FSC certified wood, rapidly renewable materials, or materials within 500 miles, such provisions are deemed deleted and replaced with the requirement that if the contractor has purchased FSC certified wood, rapidly renewable materials, or materials within 500 miles, the contractor shall submit such forms or documentation as may be required by the City in order for the USGBC to certify that the Project qualifies for the related LEED credit(s).
- (9) Guarantees: Requirements for Guarantees and Maintenance are set forth in Schedule B, which is included in the Addendum to the General Conditions. In the event of any conflict or inconsistency between (1) a guarantee and/or maintenance requirement set forth in the Specifications and/or the Contract Drawings and (2) a guarantee and/or maintenance requirement set forth in Schedule B, the guarantee and/or maintenance requirement set forth in Schedule B shall prevail.
- (10) Warranties: Requirements for Warranties are set forth in Schedule B, which is included in the Addendum to the General Conditions.
- (a) In the event of any conflict or inconsistency between (1) a warranty requirement set forth in the Specifications and/or the Contract Drawings and (2) a warranty requirement set forth in Schedule B, the warranty requirement set forth in Schedule B shall prevail.
- (b) In the event a warranty requirement set forth in the Specifications and/or the Contract Drawings is omitted from Schedule B, such omission from Schedule B shall have no effect and the Contractor's obligation to provide the manufacturer's warranty, as set forth in the Specifications and/or the Contract Drawings, shall remain in full force and effect.
- (c) In the event a warranty requirement for a particular item of material or equipment is omitted from Schedule B, as well as from the Specifications or the Contract Drawings, and the manufacturer of such item actually provides a warranty, the Contractor shall be obligated to obtain and deliver to the Commissioner the highest level of warranty actually provided by that manufacturer.
- (11) Exculpatory Provisions: In the event the Specifications and/or the Contract Drawings contain any provision whereby the consultant and/or any of its officers, employees or agents, including subconsultants, is absolved of responsibility for any act or omission, such provision is deemed deleted.
- (12) Insurance: Provisions regarding insurance coverage the Contractor is required to provide are set forth in Article 22 of the City of New York Standard Construction Contract and Schedule A, which is included in the Addendum to the General Conditions. In the event the Specifications and/or the Contract Drawings contain any provision regarding insurance requirements, such provision is deemed deleted.
- (13) Indemnification: Provisions regarding indemnification are set forth in Articles 7, 12, 22 and 57 of the City of New York Standard Construction Contract. In the event the Specifications and/or the Contract Drawings contain any provision regarding indemnification, such provision is deemed deleted.
- (14) Dispute Resolution: Provisions regarding dispute resolution are set forth in Article 27 of the City of New York Standard Construction Contract. In the event the Specifications and/or the Contract Drawings contain any provision regarding dispute resolution, such provision is deemed deleted.
- (15) Payment to Other Entities: In the event the Specifications and/or the Contract Drawings contain any provision which requires the Contractor to make payments to an entity other than a subcontractor and/or supplier providing services and/or material for the project, such provision is deemed deleted.
- (16) General Conditions: In the event of any conflict or inconsistency between (1) the Specifications and/or the Contract Drawings and (2) the General Conditions, the General Conditions shall prevail.
- (17) Standard Construction Contract: In the event of any conflict or inconsistency between (1) the Specifications and/or the Contract Drawings and (2) the City of New York Standard Construction Contract, the City of New York Standard Construction Contract shall prevail.

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Contract Requirements

Various Articles of the Contract refer to requirements which are set forth in Schedule A of the General Conditions. The Schedule set forth below specifies the following: (1) the referenced Articles of the Contract, and (2) the specific requirements applicable to each separate contract.

REFERENCE	ITEM	REQUIREMENTS	CONTRACT #1
Information For Bidders	Bid Security		See Attachment 1 – Bid Information in the Bid Booklet
Information For Bidders	Performance and Payment Bonds		See Attachment 1- Bid Information in the Bid Booklet
Article 14 Contract	Time of Completion	Consecutive Calendar Days	480 ccds
Article 15 Contract	Liquidated Damages	For each consecutive calendar day over completion time	400
Article 17 Contract	Sub-Contracts	Not to exceed Percent of Contract Price	60%
Article 21 Contract	Retainage	Percent of Voucher	If 100% bonds are required 5% If 100% bonds are not required, and Contract Price is less than \$1,000,000 10% If 100% bonds are not required, and Contract Price is more than \$1,000,000 10%
Article 24 Contract	Deposit Guarantee	Percent of Contract Price	1%
Article 24 Contract	Period of Guarantee		See Schedule B of the Addendum to the General Conditions
Article 74 Contract	Statement of Work		See Contract Article 74
Article 75 Contract	Compensation to be Paid to Contractor		See Contract Article 75
Article 78 Contract	MWBE Program		See MWBE Utilization Plan in the Bid Booklet

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions

Note: All certificate(s) of insurance submitted pursuant to Contract Article 22.3. 3 must be accompanied by a Certification by Broker consistent with Part III below and include the following information:

- For each insurance policy, the name and NAIC number of issuing company, number of policy, and effective dates;
- Policy limits consistent with the requirements listed below;
- Additional insureds or loss payees consistent with the requirements listed below; and
- The number assigned to the Contract by the City (in the "Description of Operations" field).

Insurance indicated by a blackened box (■) or by (X) in the to left will be required under this contract.

Types of Insurance (per Article 22 in its entirety, including listed paragraph)	Minimum Limits and Special Conditions
<p>■ Commercial General Liability Art. 22.1.1</p>	<p>The minimum limits shall be \$1,000,000.00 per occurrence and \$2,000,000.00 per project aggregate applicable to this Contract.</p> <p>Additional Insureds:</p> <ol style="list-style-type: none"> 1. City of New York, including its officials and employees, with coverage at least as broad as ISO Forms CG 20 10 and CG 20 37, and 2. All person(s) or organization(s), if any, that Article 22.1.1(b) of the Contract requires to be named as Additional Insured(s), with coverage at least as broad as ISO Form CG 20 26. The Additional Insured endorsement shall either specify the entity's name, if known, or the entity's title (e.g., Project Manager). 3. The Harlem School of Arts, Inc.
<p>■ Workers' Compensation Art. 22.1.2</p> <p>■ Disability Benefits Insurance Art. 22.1.2</p> <p>■ Employers' Liability Art. 22.1.2</p> <p><input type="checkbox"/> Jones Act Art. 22.1.3</p> <p><input type="checkbox"/> U.S. Longshoremen's and Harbor Workers Compensation Act Art. 22.1.3</p>	<p>Workers' Compensation, Employers' Liability, and Disability Benefits Insurance: Statutory per New York State law without regard to jurisdiction.</p> <p>Note: The following forms are acceptable: (1) New York State Workers' Compensation Board Form No. C-105.2, (2) State Insurance Fund Form No. U-26.3, (3) New York State Workers' Compensation Board Form No. DB-120.1 and (3) Request for WC/DB Exemption Form No. CE-200. The City will not accept an ACORD form as proof of Workers' Compensation or Disability Insurance.</p> <p>Jones Act and U.S. Longshoremen's and Harbor Workers' Compensation Act. Statutory per U.S. law.</p>

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions

Insurance indicated by a blackened box (■) or by (X) in the to left will be required under this contract.

Types of Insurance (per Article 22 in its entirety, including listed paragraph)	Minimum Limits and Special Conditions
<input checked="checked" type="checkbox"/> Builders' Risk Art. 22.1.4	100 % of total value of Work Contractor the Named Insured; the City both an Additional Insured and one of the loss payees as its interests may appear. If the Work does not involve construction of a new building or gut renovation work, the Contractor may provide an installation floater in lieu of Builders Risk insurance. Note: Builders Risk Insurance may terminate upon Substantial Completion of the Work in its entirety.
<input checked="checked" type="checkbox"/> Commercial Auto Liability Art. 22.1.5	\$1,000,000.00 per accident combined single limit If vehicles are used for transporting hazardous materials, the Contractor shall provide pollution liability broadened coverage for covered vehicles (endorsement CA 99 48) as well as proof of MCS 90
<input type="checkbox"/> Contractor's Pollution Liability Art. 22.1.6	\$ _____ per occurrence \$ _____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
<input type="checkbox"/> Marine Protection and Indemnity Art. 22.1.7(a)	\$ _____ per occurrence \$ _____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions (Continued)

Insurance indicated by a blackened box (■) or by (X) in the to left will be required under this contract.

Types of Insurance (per Article 22 in its entirety, including listed paragraph)	Minimum Limits and Special Conditions
<input type="checkbox"/> Hull and Machinery Insurance Art. 22.1.7(b)	\$ _____ per occurrence \$ _____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
<input type="checkbox"/> Marine Pollution Liability Art. 22.1.7(c)	\$ _____ each occurrence Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
[OTHER] Art. 22.1.8 <input type="checkbox"/> Ship Repairers Legal Liability	\$ _____ each occurrence [Contracting agency to fill in total value of City vessels involved]
[OTHER] Art. 22.1.8 <input type="checkbox"/> Collision Liability/Towers Liability	\$ _____ per occurrence \$ _____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
[OTHER] Art. 22.1.8 <input type="checkbox"/> Railroad Protective Liability	\$ _____ per occurrence \$ _____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions (Continued)

Insurance indicated by a blackened box (■) or by (X) in the to left will be required under this contract.

<p>[OTHER] Art. 22.1.8</p> <p><input type="checkbox"/> Asbestos Liability _____</p>	<p>Only required of the Contractor or Subcontractor performing any required asbestos removal.</p> <p>\$1,000,000 each occurrence, \$2,000,000 aggregate (Combined Single Limit); only required of the Contractor or Subcontractor performing any required asbestos removal.</p> <p>Additional Insureds: 1. City of New York, including its officials and employees, and</p> <p>2. _____ 3. _____</p>
<p>[OTHER] Art. 22.1.8</p> <p>■ Boiler Insurance _____</p>	<p>\$200,000</p>
<p>[OTHER] Art. 22.1.8</p> <p>■ Professional Liability</p> <p>In the event any section of the Specifications requires the Contractor to engage a Professional Engineer to provide design and/or engineering services, the Engineer engaged by the Contractor, as well as any sub consultant(s) performing professional services, shall provide Professional Liability Insurance.</p>	<p>\$1,000,000 per occurrence</p> <p>The Contractor's Professional Engineer shall maintain and submit evidence of Professional Liability Insurance in the minimum amount of \$1,000,000 per claim. The policy or policies shall include an endorsement to cover the liability assumed by the Contractor under this Agreement arising out of the negligent performance of professional services or caused by an error, omission or negligent act of the Contractor's Professional Engineer or anyone employed by the Contractor's Professional Engineer.</p> <p>Claims-made policies will be accepted for Professional Liability Insurance. All such policies shall have an extended reporting period option or automatic coverage of not less than two (2) years. If available as an option, the Contractor's Professional Engineer shall purchase extended reporting period coverage effective on cancellation or termination of such insurance unless a new policy is secured with a retroactive date, including at least the last policy year.</p>

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART III. Broker's Certification

[Pursuant to Article 22.3.3 of the **Contract**, every Certificate of Insurance must be accompanied by either the following certification by the broker setting forth the following text and required information and signatures or certified copies of all policies referenced in the Certificate of Insurance.]

CERTIFICATION BY BROKER

The undersigned insurance broker represents to the City of New York that the attached Certificate of Insurance is accurate in all material respects, and that the described insurance is effective as of the date of this Certification.

[Name of broker (typewritten)]

[Address of broker (typewritten)]

[Email address of broker (typewritten)]

[Phone number/Fax number of broker (typewritten)]

[Signature of authorized official or broker]

[Name and title of authorized official (typewritten)]

State of)
) ss:
County of)

Sworn to before me this
____ day of _____, 20__

NOTARY PUBLIC FOR THE STATE OF _____

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART IV. Address of Commissioner

Wherever reference is made in Article 7 or Article 22 to documents to be sent to the **Commissioner** (e.g., notices, filings, or submissions), such documents shall be sent to the address set forth below or, in the absence of such address, to the **Commissioner's** address as provided elsewhere in this **Contract**.

ACCO's Office, Insurance Unit

30-30 Thomson Avenue, 4th Floor

Long Island City, New York 11101

SCHEDULE B

Guarantees and Warranties

(Reference: Section 01 7839, Article 2.7 of the DDC Standard General Conditions)

GUARANTY FROM CONTRACTOR

(1) **Contractor's Guaranty Obligation:** The Contractor shall promptly repair, replace, restore or rebuild, as the Commissioner may determine, any finished Work in which defects of materials or workmanship may appear or to which damage may occur because of such defects, during the one (1) year period subsequent to the date of Substantial Completion (or use and occupancy in accordance with the Contract), except for the areas of Work set forth below:

- Roofing, Waterproofing, and Joint Sealant Work. For these types of work, the guarantee period shall be (2) two years.
- Trees and/or Plant Material. For trees and/or plant material furnished and installed, the guarantee period shall be (2) two years. During the guarantee period, the Contractor shall provide all maintenance services set forth in the Specifications.

(2) **Guaranty Period:** The obligation of the Contractor, and its Surety under the Performance Bond, is limited to the period(s) of time specified above.

(3) **Other Provisions Deemed Deleted:** In the event the Specifications and/or the Contract Drawings contain any provisions regarding guaranty requirements, such provisions are deemed deleted and replaced with the guaranty requirements set forth in this Schedule B.

WARRANTY FROM MANUFACTURER

(1) **Contractor's Obligation to Provide Warranties:** The items of material and/or equipment for which manufacturer warranties are required are listed below. For each item of material and/or equipment listed below, the Contractor shall obtain a written warranty from the manufacturer. Such warranty shall provide that the material or equipment is free from defects for the period set forth below and will be replaced or repaired within such specified period. The Contractor shall deliver all required warranties to the Commissioner.

(2) **Required Warranties:**

Specification Number	Material or Equipment	Warranty Period
07 51 00	Built-Up Roofing	20 years
07 92 00	Silicone Sealants	20 years
07 92 00	Polyurethane or Silicone	5 years
08 11 02	Steel Doors and Frames	1 year
08 11 16	Aluminum Doors and Frames	1 year
08 71 00	Finish Hardware	1 year
22 14 29	Sump Pump, Submersible	5 years
22 33 01	Domestic Water Heater (Glass Lined Tank)	3 years

22 44 53	Pumps	5 years
23 05 01	General Equipment, Workmanship, Material	1 year
23 09 23	Temperature Control System	1 year (48 hours repair period)
23 21 23	Hydronic Pumps	5 years
23 33 13	Dampers (Actuator)	5 years
23 34 00	Centrifugal Fans	2 years
23 52 23	Cast Iron Boiler	10 years
23 52 24	Fuel Burning Equipment Burner	1 years 2 year
23 63 13	Air Cooled Condensing Unit	2 years (5 years compressor)
23 73 13	Air Handling Units	2 years
23 81 06	Packaged Rooftop Unit Refrigeration Compressors	2 years 5 years
26 05 01	General provisions for Electrical Work	5 Years
26 24 19	Motors, Starters and Control Equipment	5 years
31 23 43	EPS Geofoam	10 years

(3) **Application:** The obligations under the warranty for the periods specified above shall apply only to the manufacturer of the material or equipment, and not to the Contractor or its Surety; provided, however, the Contractor retains responsibility for obtaining all required warranties from the manufacturers and delivering the same to the Commissioner.

(4) **Other Provisions:** The warranty requirements set forth in this Schedule B are also included in the Specifications.

- (a) In the event of any conflict between a warranty requirement set forth in the Specifications and a warranty requirement set forth in Schedule B, the warranty requirement set forth in Schedule B shall take precedence.
- (b) In the event a warranty requirement set forth in the Specifications is omitted from Schedule B, such omission from Schedule B shall have no effect and the Contractor's obligation to provide the manufacturer's warranty, as set forth in the Specifications, shall remain in full force and effect
- (c) In the event a warranty requirement for a particular item of material or equipment is omitted from both Schedule B and the Specifications, and the manufacturer of such item actually provides a warranty, the Contractor shall be obligated to obtain and deliver to the Commissioner the highest level of warranty actually provided by that manufacturer.
- (d) In the event a warranty requirement is provided for a particular item of material or equipment, and such requirement specifies a warranty period that is longer than that which is actually provided by any of the specified manufacturers, the Contractor shall be obligated to obtain and deliver to the Commissioner the highest level of warranty actually provided by any of the specified manufacturers,

unless otherwise directed in writing by the Commissioner.

- (e) Unless indicated otherwise Warranties are to take effect on the date of Substantial Completion.

SCHEDULE C

Contract Drawings

(Reference: Section 01 1000, Article 1.5 (A) of the DDC Standard General Conditions)

The Schedule set forth below lists all Contract Drawings for the Project.

<u>1. HARLEM SCHOOL OF ARTS:</u>	
T-001.00	TITLE SHEET
<u>ARCHITECTURAL DRAWINGS</u>	
DM-001.00	FIRST FLOOR PLAN DEMOLITION
DM-002.00	SECOND FLOOR PLAN DEMOLITION
DM-003.00	DEMOLITION. ROOF OVER 2 ND FL.
A-001.00	FIRST FLOOR PLAN
A-002.00	SECOND FLOOR PLAN
A-003.00	ROOF OVER 2 ND FL. AND 3 RD FL. PLAN
A-004.00	EAST ELEVATION, SECTION, AND HAND RAILS VIEW
A-005.00	ENLARGED PLANS
A-006.00	SECTIONS AND DETAILS
A-007.00	SECTIONS AND DETAILS
A-008.00	SECTIONS AND DETAILS
A-009.00	PARTITION DETAILS
A-010.00	DOOR AND WINDOW SCHEDULES
A-011.00	ELEVATOR CAB – INTERIOR FINISH
A-012.00	Not Used
A-013.00	TOILET PLANS AND ELEVATIONS
A-101.00	NEW ELEVATOR PLAN AND SECTION
<u>STRUCTURAL DRAWINGS</u>	
S-001.00	GENERAL AND STRUCTURAL NOTES
DM-004.00	FIRST FLOOR PLAN DEMOLITION
DM-005.00	SECOND FLOOR PLAN DEMOLITION
DM-006.00	DEMOLITION ROOF OVER 2 ND FL.
S-002.00	FIRST FLOOR PLAN
S-003.00	SECOND FLOOR PLAN
S-004.00	ROOF OVER 2 ND FL. AND 3 RD FL. PLAN
S-005.00	SECTIONS AND DETAILS
S-006.00	SECTIONS AND DETAILS
S-007.00	ACOUSTICAL BARRIERS. PLANS AND ELEVATIONS.
S-008.00	ACOUSTICAL BARRIERS. SECTION AND DETAILS
S-009.00	ACOUSTICAL BARRIERS. ROOF PENETRATIONS AND CURB SUPPORTS
<u>MECHANICAL DRAWINGS</u>	
EN-001.00	ECCC-NYS COMPLIANCE -COMCHECK
EN-002	ECCC-NYS COMPLIANCE -COMCHECK

M-001.00	MECHANICAL NOTES, SYMBOLS LIST AND ABBREVIATIONS
DM-007.00	HVAC - DEMOLITION BASEMENT AND BOILER ROOM PLANS
DM-008.00	HVAC - DEMOLITION FIRST FLOOR PLAN
DM-009.00	HVAC - DEMOLITION SECOND FLOOR PLAN
M-010.00	HVAC - DEMOLITION ROOF / 3RD FLOOR PLAN
M-002.00	HVAC - CELLAR, BOILER ROOM AND UPPER ROOF PLANS
M-003.00	HVAC - FIRST FLOOR PLAN
M-004.00	HVAC - SECOND FLOOR PLAN
M-005.00	HVAC - THIRD FLOOR PLAN
M-006.00	HVAC - DETAILS
M-007.00	HVAC - DETAILS
M-008.00	HVAC - CONTROL SCHEMATICS
M-009.00	HVAC - EQUIPMENT SCHEDULES
	<u>PLUMBING DRAWINGS</u>
P-001.00	PLUMBING NOTES, SYMBOLS LIST AND ABBREVIATIONS
DM-011.00	PLUMBING DEMOLITION FIRST FLOOR PLAN
DM-012.00	PLUMBING DEMOLITION SECOND FLOOR PLAN
DM-013.00	PLUMBING DEMOLITION THIRD FLOOR PLAN
P-002.00	PLUMBING FIRST FLOOR PLAN
P-003.00	PLUMBING SECOND FLOOR PLAN
P-003.A.00	A.D.A. TOILET ROOM ENLARGED PLANS AND RISERS.
P-004.00	PLUMBING THIRD FLOOR AND ROOF PLAN
	<u>ELECTRICAL DRAWINGS</u>
E-001.00	ELECTRICAL NOTES, SYMBOLS LIST AND ABBREVIATIONS
M-014.00	ELECTRICAL 1ST, 2ND AND 3RD FLOOR PLANS - DEMOLITION
DM-015.00	ELECTRICAL POWER RISER DEMOLITION
E-002.00	ELECTRICAL - CELLAR AND 1ST FLOOR PLANS
E-003.00	ELECTRICAL - 2ND, 3RD FLOORS AND ROOF PLANS
E-004.00	ELECTRICAL - ELEVATOR DETAILS
E-005.00	ELECTRICAL - RISER DIAGRAM
E-006.00	ELECTRICAL - SCHEDULES
E-007.00	ELECTRICAL - DETAILS
	<u>FIRE ALARM</u>
FA-001.00	FIRE ALARM- NOTES, SYMBOLS, AND ABBREVIATIONS
FP-002.00	FIRE ALARM- CELLAR AND FIRST FLOOR PLANSPLAN
FP-003.00	FIRE ALARM- SECOND, THIRD AND ROOF PART PLANS

SCHEDULE D

Electrical Motor Control Equipment

(Reference: 01 3506, Article 3.8 of the DDC Standard General Conditions)

Requirements for electrical motor equipment may be included in one or more sections of the Specifications for the Contract for the Project. Schedule D set forth below delineates specific information for electrical motor control equipment. In the event of any conflict between the Specifications and this Schedule D, Schedule D shall take precedence; provided, however, in the event of an omission from Schedule D (i.e., Schedule D omits either a reference to or information concerning electrical motor equipment which is set forth in the Specifications), such omission from Schedule D shall have no effect and the Contractor's obligation with respect to the electrical motor control equipment, as set forth in the Specifications, shall remain in full force and effect.

DB Disconnect Circuit Breaker (Switch)	P Pilot Light	BG Break Glass Station
TS Thermal Switch	F Firestat	HOA Hand-Off Auto.
MS Magnetic Starter	T Thermostat	PB Push Button Station
CMS Comb. Mag. Starter	AL Alternator	RO Remote "off"

Equip. Ident.	Location	# of Units	HP or KW	Volts and Phase	Control Type: See legend above	Remarks:
ELEVATOR	EMR, 1 ST FLOOR	1	30HP	208V, 3 Ph	CMS	
HVAC-2	ROOF	1	54.93 KW	208V, 3 Ph	DS	
HVAC-3	ROOF	1	38.88 KW	208V, 3 Ph	DS	
HVAC-4	ROOF	1	88.15 KW	208V, 3 Ph	DS	
HVAC-5	ROOF	1	7.97 KW	208V, 3 Ph	DS	
AHU-1	EMR, 1 ST FLOOR	1	0.035 KW	208V, 1 Ph	DS	
ACCU-1	ROOF	1	2.46 KW	208V, 1 Ph	DS	
P-1, P-2	Boiler Room, 3 rd FLOOR	1+1	3 HP	208V, 3 Ph	DS/VSD	Lead-Lag Pkg
RP-1	Boiler Room, 3 rd FLOOR	1	1/6 HP	120V, 1 Ph	MS	

CP-1	EMR, 1 ST FLOOR	1	1/30 HP	208V, 1 Ph	DS	
SP-1	ELEVATOR, PIT	1	1/3 HP	120V, 1 Ph	DS	
EF-1	ELEVATOR, ROOF	1	0.25 HP	120V, 1 Ph	DS	
BOILER	Boiler Room, 3 rd FLOOR	1	1	120V, 1 Ph	BG	

SCHEDULE E

Separation of Trades

NOT USED FOR SINGLE CONTRACTS

SCHEDULE F

Submittals Schedule

(Reference: Section 01 3300 Article 1.5 (C) of the General Conditions)

The Schedule set forth below lists all submittal requirements for the Contract. In the event of any conflict between the Specifications and this Schedule F, Schedule F shall take precedence; provided, however, in the event of an omission from Schedule F (i.e., Schedule F omits either a reference to or information concerning a submittal requirement which is set forth in the Specifications), such omission from Schedule F shall have no effect and the Contractor's submittal obligation, as set forth in the Specifications, shall remain in full force and effect.

CONSULTANT:
 TELEPHONE NUMBER:
 DDC PROJECT MANAGER:
 TELEPHONE NUMBER:

DATE: _____
 APPROVED: _____
 (DDC RESIDENT ENGINEER/CPM)

REPORT DATE		FMS ID #/PROJECT ID #/ CONTRACT REGISTRATION #/ PROJECT NAME:	Contract 1 - GENERAL CONSTRUCTION														
SPEC. SECT. #	DESCRIPTION	COORD. WITH CONTR.	SUBMITTAL	SUB. DATE	REQ'D DEL.	FABRIC. TIME	SUBMISSIONS										
			SHOP DWG	SAMPLE	CAT CUTS			REC'D	RET'D	ACTION	REC'D	RET'D	ACTION	REC'D	RET'D	ACTION	
01 3526	Safety and Health Program	X															
01 3526	Contractor's Safety Plan	X															
01 3526	Historic Treatment Plan	X															
01 5000	Site Plan		X														
01 5000	Reports	X															
01 5423	NYC DOB Scaffold & Sidewalk Shed Permits	X	X														
01 5423	Site Logistics/Site Safety Plan	X															

01 5423	Scaffold & Shed Installation Drawings								X											
01 5423	Instruction Program for Demonstration & Orientation		X																	
01 7900	Qualification Data		X																	
01 7900	Selective Removal and Demolition								X											
024119	Cast in Place Concrete									X										
033000	Unit Masonry								X											
042000	Structural Steel								X											
051200	Fluted Steel Deck								X											
053100	Metal Fabrication								X											
055000	Wood Nailers and Blocking								X											
061053	Maintenance of Membrane Roofing								X											
070150	Cementitious Waterproofing									X										
071613	Built-up Bituminous Roofing								X											
075100	Flushing and sheet metal								X											
076100	Firestopping Smoke Seals																			
078400	Joint Sealers																			

230523	Valves (HVAC)															X			
230549	Vibration Isolation		X													X			
230553	HVAC Identification															X			
230594	Balancing of Systems		X																
230701	Piping Insulation		X													X			
230702	Equipment Insulation		X													X			
230703	Ductwork Insulation		X													X			
230923	TCS with Web-based BMS		X													X			
230993	Sequence of Operation		X																
232003	Thermometers and Gauges															X			
232116	Hydronic Specialties		X													X			
232123	Hydronic Pumps															X			
232500	Water Treatment (test)															X			
233113	Metal Ductwork		X													X			
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END OF SECTION

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GENERAL CONSTRUCTION WORK

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SECTION 011010
SUMMARY OF WORK

PART 1 - GENERAL

1.01 WORK UNDER THE CONTRACT

Upgrade the existing facility which will include the rehabilitation of the main entrance to achieve barrier free accessibility, creation of a barrier free restroom on the second floor, installation of a new elevator to serve the first and second floors, replacing the boiler and hot water systems, new central air-conditioning units, modification of existing air-distribution system as required to effectively serve all areas of the building

The Work shall be as described in the Contract Documents and is to include, but not limited to the following:

A. Mechanical:

1. Replace four (4) the existing Air Handling Units HVAC-2, 3,4,5 with new Gas-Fired Rooftop Units with DX cooling coil.
2. Modification of air distribution system in areas shown on construction drawings. Replace six (6) VAV boxes.
3. Replace existing oil-fired boiler with new gas-fired hot water heating boiler and associated piping and component equipment in boiler room, such as pumps, expansion tank, chemical feeder, and air separator.
4. Provide new domestic hot water heater and associated piping and pump in Boiler room, as depicted under Plumbing section below.
5. Provide direct digital control (DDC) system for all new equipment and systems, and a building management system to control, monitor and/or alarm equipment operation.
6. Install a new split system Ac unit in elevator machine room and exhaust fan on the top of elevator shaft.

B. Electrical:

1. Disconnects power supply from existing HVAC equipment to be removed.
2. Provide power supply to new HVAC units, Boiler, and pumps.

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3. Provide special outlets dedicated circuits for the acoustics / sound system and other portable devices for G - space area.
4. Provide electrical installations power & lighting for new barrier free accessible bathroom.
5. Provide power for the new passenger elevator and associated Machine Room.
6. Install GFI receptacle on the roof.
7. Power requirements for all trades providing equipment.
8. Modify Fire Alarm system to provide duct and elevator smoke detectors, temper and flow switch.
9. Temporary Remove and reinstall lighting fixtures in areas where required for ductwork modification or Elevator installation.
10. Install new lighting fixtures in Elevator Machine Room.
11. Install new exist signs where shown.

C. Fire Protection (Sprinkler):

1. Provide new sprinkler head in elevator pit. Connect to the portable water pipe. Provide isolation and Check valves, flow switch.

D. Plumbing:

1. Provide for the demolition of existing toilets and associated piping systems on the second floor Men's toilet. Cap existing services for reconnection of new plumbing fixtures where possible.
2. Disconnect or remove existing gas piping running above roof to existing mechanical roof top units. Cap existing gas piping for reconnection new roof top units where possible.
3. Remove existing steam generated storage domestic water heater in the penthouse mechanical room and all related existing piping, valves, circulation pump, storage tank supports and controls.
4. Remove existing area drains outside at the existing entry way and existing storm water piping, including any required excavation, backfill of the trench into the building.
5. Provide a complete sanitary and vent system for the new ADA toilets and connect new piping into the

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- existing sanitary and vent lines of adequate size above and below floor.
6. Provide new storm water drains and associated storm water piping at the building's main entrance. Include all work to connect new piping into the existing storm water piping buried below the existing concrete slab.
 7. Provide new gas piping to new gas fired roof top units on the existing roof. And new piping to a new gas fired water heater in the existing penthouse mechanical room.
 8. Provide domestic cold water supply to new plumbing fixtures, water heater and any equipment that required water. Include all required valves, chair carries and all associated items as required for proper operation of all plumbing fixtures or equipment.
 9. Provide new domestic water storage heater in the penthouse mechanical room. Include reconnection to existing piping, hot water to new plumbing fixtures, hot water circulation pump, concrete pad, valves and controls.
 10. Provide handicap accessible plumbing fixtures and accessories in ADA compliant toilet.

E. Architectural:

1. Installation of barrier free ramp at the main entrance.
2. Replacement of main entrance door and vestibule door.
3. Replacement of existing window in Security Office.
4. Installation of an elevator to serve the first and second floors.
5. Modification to the first and second floor areas affected by installation of new elevator.
6. Creation of a barrier free accessible restroom on the second floor.
7. Partial Roof replacement associated with installation of elevator bulkhead. Provide a new mail Shute next to the main entrance door.
8. Install wheelchair elevator in Room No. 112, Visual Arts.

F. Structural:

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1. Provide necessary structural modification compatible with architectural schemes for the installation of ADA ramp, as shown.
2. Provide necessary structural schemes, compatible with architectural schemes for the installation of an elevator to the second floor and Room 112 on the first floor for handicap accessibility.
3. Provide dunnage structure where shown.
4. Provide structural modification and reinforcing schemes for supporting new partitions, equipment, utility lines, etc., and for new floor and wall openings to accommodate all other architectural and engineering discipline schemes.
5. Provide floor opening and underpinning of existing structure at elevator pit.
6. Provide elevator shaft.
7. Provide Acoustical Barrier installation and supports.

1.02 ITEMS NOT INCLUDED

The following items shown on the Drawings are not included in the Work:

- A. Items indicated "By Others".
- B. Items indicated "N.I.C." (Not in Contract).
- C. Existing construction not indicated or specified to be removed, replaced or altered.

1.03 CUTTING, PATCHING AND REMOVALS

- A. Contractor shall do all cutting and patching, painting and finishing of existing work which is disturbed while performing the Work. Contractor shall be responsible for restoring new work which is damaged. All work shall be restored to provide a new appearance and to be structurally sound.
- B. The work shall be done by competent workmen skilled in the trade required by the restoration.
- C. Examination:
 1. Prior to cutting, drilling, or removal, investigate both sides of the surface involved. Determine the exact location of structural members.

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2. If unforeseen obstructions are encountered, take precautions necessary to prevent damage and obtain instructions from the Commissioner before proceeding with the Work.

D. Preparation:

1. Provide temporary shoring and other supports necessary to prevent settlement or other damage to existing construction, which is to remain.
2. Prepare existing surfaces properly to receive, and where required, to bond with the Work.

E. Patching:

1. Patch existing construction and finishes defaced, damaged, or left incomplete due to alterations or removals. Patching, except as otherwise indicated, shall be limited to the areas which have been cut or altered; match materials, finishes, underlying construction, and quality of area patched.
2. In rooms and locations where doors are removed, also remove the door stops and blocks thereof secured to wall or floors.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

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SECTION 024119
SELECTIVE REMOVALS & DEMOLITION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Extent of Work

Removal and demolition of selected items from selected areas as indicated on the Drawings; items to be removed include, but are not limited to, the following:

1. Exterior concrete stairs and ramp.
2. Structural framing.
3. Floor cover and on-floor slabs.
4. Partial walls.
5. Hot water boilers.
6. Air handler units.
7. Condensing units.
8. Return air fans.
9. Refrigerant and hot water piping.
10. Ductwork.
11. Pipe and duct insulation.
12. Hot water pumps.
13. Existing cable and conduit, junction and pull box(es), motor starters and switches, timers and etc.
14. Duct type smoke detectors.

1.02 SUSTAINABILITY REQUIREMENTS

A. Although this is not a LEED project, the Contractor shall implement practices and procedures to meet the Project's sustainable requirements. The Contractor shall ensure that the requirements related to these goals, as specified in this Section, are implemented to the fullest extent. Substitutions or other changes to the work shall not be proposed by the Contractor or their sub-contractors if such changes compromise the stated Sustainable Design Performance Criteria.

B. Sustainability requirements included in the Section are as follows:

1. Refrigerant recovery requirements.

2. Demolition waste management.
3. Management of dust and particulate matter.
4. Management of petroleum-contaminated material and/or hazardous waste in accordance with all applicable city, state, and federal regulations

1.03 REFERENCES

References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

A. New York State Department of Environmental Conservation

6 NYCRR Part 371 Identification and Listing of Hazardous Wastes

6 NYCRR Part 372 Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities

6 NYCRR Part 373 Hazardous Waste Treatment, Storage and Disposal Facility Permitting Requirements

STARS Memo #1 Petroleum-Contaminated Soil Guidance Policy

TAGM HWR-94-4046 Determination of Soil Cleanup Objectives and Cleanup Levels

B. United States Department of Transportation

49 CFR 172, Subpart C Shipping Papers

49 CFR 172, Subpart D Marking

49 CFR 172, Subpart F Placarding

49 CFR 172, Subpart G Emergency Response Information

49 CFR 173 General Requirements for Shipments and Packagings

49 CFR 177 Carriage by Public Highway

C. United States Environmental Protection Agency

40 CFR Part 261 Definition of RCRA Hazardous

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Wastes

40 CFR Part 262 Identification and Listing of
Hazardous Waste

40 CFR Part 263 Standards Applicable to
Transporters of Hazardous Waste

40 CFR Part 265 Interim Status Standards for
Owners and Operators of Hazardous Waste Treatment,
Storage, and Disposal Facilities

- D. All applicable Department of Transportation and
Department of Sanitation Rules and Regulations

1.04 DEFINITIONS

A. Excavation

Excavation consists of removal of material encountered
to contract level, stockpiling, loading, handling and
subsequent legal disposal of such.

B. Petroleum-Contaminated Material

This material shall meet the NYSDEC STARS Memo #1
definition of petroleum-contaminated material.
Specifically, petroleum-contaminated material should be
evidenced by odor, visual impacts (e.g., staining),
proximity to existing or historic petroleum storage
tanks and systems, known or suspected releases and
exceed the guidance values provided in the NYSDEC STARS
Memo #1.

C. Hazardous Waste

Material that meets the definition of a Resource
Conservation and Recovery Act hazardous waste as
defined in 40 CFR Part 261 or 6 NYCRR Part 371.

1.05 SUBMITTALS

- A. Submit a schedule indicating proposed methods and
sequence of operations for selective removals and
demolition Work, prior to commencement of operations.
The sequence of operations shall be planned, in
detail, to ensure uninterrupted progress of library
daily activities.
- B. Submit details and procedures for dust and noise
control.

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- C. Demolition Schedule: Indicate overall schedule and interruptions required for utility and building services.
- D. Control Submittals:
 - 1. Permits: Submit one copy of each permit.
 - 2. Demolition Plan: For information only, submit one copy of the demolition plan required under
- E. Quality Control Submittals
 - 1. Contractor Qualifications
 - a. Provide proof of Contractor and Professional Engineer qualifications specified under "Quality Assurance".
 - b. Provide proof of Refrigerant Recovery Technician qualifications
- F. Sustainability Submittals
 - 1. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to **EPA** regulations. Include name and address of technician and date refrigerant was recovered.
 - 2. Statement of the measures taken to reduce air with dust and particulate matter.

1.06 RESPONSIBILITY, PROTECTION, DAMAGES, RESTRICTIONS

A. Condition of Space

The City of New York assume no responsibility for actual condition of the space in which removals and demolition Work is performed.

B. Protections

Provide temporary barricades and other forms of protection required to protect City of New York property, personnel, and general public from injury due to selective removals and demolition work.

- 1. Provide protective measures as required to provide free and safe passage of City of New York personnel, and the general public.

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2. Protect from damage existing finish work that is to remain in place and which becomes exposed during operations.
3. Protect floors with building paper or other suitable covering.
4. Protect utilities during Work of this section.

C. Damages

Promptly repair any and all damages to all property and finishes caused by the removals and demolition work; to the Commissioner's satisfaction and at no extra cost to the City of New York.

D. Explosives

The use of explosives is prohibited.

E. Power-driven Tools (for interior removals and demolition).

Only hand-held electric power-driven tools conforming to the following criteria shall be used to cut or drill masonry:

1. Electric Chiselling Hammer
 - a. Power Data 115 Volts AC
7-8 Amps
Three-wire grounded connection
 - b. Percussion 2400-2600 Impacts/Minute
 - c. Type/Size Hand-held (+ 18-inch length)
 - d. Unit Weight 12-15 pounds (minus chisel bit)
2. Electric Hammer Drill
 - a. Power Data 115 Volts AC
5-8 Amps
Three-wire grounded connection
 - b. Percussion 2400-3200 Impacts/Minute
 - c. Type/Size Hand-held (+ 18-inch length)
 - d. Unit Weight 12-15 pounds (minus chisel bit)
 - e. Speed Data 0-0500 RPM (Under load)

1.07 QUALITY ASSURANCE

- A. Permits: Before the Work of this Section is started, obtain all permits required by Federal, State, and local jurisdictions for all phases and operations of the Work.
- B. Qualifications
 - 1. Company specializing in performing the Work of this Section shall have a minimum of 3 years experience and shall have worked on projects of similar size.
 - 2. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.
- C. Regulatory Requirements
 - 1. Work of this Section shall conform to all requirements of the **NYC Building Code** and all applicable regulations and guidelines of all governmental authorities having jurisdiction, including, but not limited to, safety, health, and anti-pollution regulations. Where more stringent requirements than those contained in the Building Code or other applicable regulations are given in this Section, the requirements of this Section shall govern.
- D. Demolition Plan: Before the Work of this Section is started, prepare a detailed demolition plan. The demolition plan shall include, but not be limited to, detailed outline of intended demolition and disposal procedures. The demolition plan will not relieve the Contractor of complete responsibility for the successful performance of the Work, which shall conform to all requirements of the NYC Building Code and all applicable regulations and guidelines of all governmental authorities having jurisdiction, including, but not limited to, safety, health, and anti-pollution regulations. Where more stringent requirements than those contained in the Building Code or other applicable regulations are given in this Section, the requirements of this Section shall govern.
- E. Conform to the safety requirements of OSHA.

1.08 PROJECT CONDITIONS

- A. Conduct demolition to minimize interference with adjacent and occupied building areas.

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- B. Existing Paint: Assume existing painted surfaces to contain lead based paints. Take precautions as required to prevent spread of lead containing particles and dust. Specific requirements will be provided by Commissioner.
- C. Cease operations immediately if structure appears to be in danger and notify Commissioner. Do not resume operations until directed.
- D. Damages: Promptly repair any and all damages to all property and finishes caused by the removals and demolition work; to the Commissioner satisfaction and at no extra cost to City of New York.
- E. Verify the location and status of all utilities within the Contract Limit Line (CLL).
- F. Disconnect the following utilities:
 - 1. Gas: Comply with utility regulations.
 - 2. Electric: Comply with National Electric Code and utility regulations.
- G. Do not interrupt utility services to buildings which are to remain.

PART 2 - PRODUCTS - NOT APPLICABLE

PART 3 - EXECUTION

3.01 INSPECTION

- A. Prior to commencement of the selective removals and demolition Work, inspect the areas in which the Work will be performed. Determine and list the existing conditions of rooms or area surfaces and equipment. After the Work in each respective area is completed, determine if adjacent surfaces or equipment have been damaged as a result of the Work; if so, the damage shall be corrected at the Contractor's expense.

3.02 PREPARATION

- A. Search each building. Locate drums or containers of hazardous wastes. Remove hazardous wastes in accordance with Federal and State regulations.
- B. Remove loose equipment, materials, supplies, and furnishings (desks, chairs, beds, mattresses, furniture, etc.) from building prior to demolition.
- C. Remove items scheduled to be salvaged for the Facility,

and place in designated storage area.

3.03 REMOVALS AND DEMOLITION WORK

- A. Perform selective demolition Work in a systematic manner and use such methods as are required to complete the Work indicated, and in accordance with the Specifications and governing City, State, and Federal regulations.
- B. Wet down masonry and plaster materials during demolition to prevent spread of dust and dirt. Sprinkle debris, and use temporary enclosures as necessary to limit dust to lowest practicable level. Do not use water to extent causing flooding, contaminated runoff, or icing.
- C. Do not place demolition equipment in buildings where it will create excessive loads on supporting walls, floors, and frames. Promptly remove accumulated debris and materials.
- D. Lower structural framing members to ground by hoist or crane.
- E. Demolition:
 - 1. Notify affected utility companies before starting work and comply with their requirements.
 - 2. Mark location and termination of utilities.
 - 3. Erect, and maintain temporary barriers and security devices, including warning signs and lights, and similar measures, for protection of the public, occupants, and existing improvements indicated to remain.
 - 4. Erect and maintain weatherproof closures for exterior openings.
 - 5. Erect and maintain temporary partitions to prevent spread of dust, odors, and noise to permit continued Owner occupancy.
 - 6. Prevent movement of structure; provide temporary bracing and shoring required to ensure safety of existing structure.
 - 7. Provide appropriate temporary signage including signage for exit or building egress.
 - 8. Do not close or obstruct building egress path.
 - 9. Do not disable or disrupt building fire or life safety systems without three (3) days prior written notice to the City of New York.

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10. Conduct demolition to minimize interference with adjacent and occupied buildings.
 11. Maintain protected egress from and access to adjacent existing buildings at all times.
 12. Do not close or obstruct roadways or sidewalks without permits.
 13. Cease operations immediately when structure appears to be in danger and notify Commissioner.
 14. Disconnect and remove designated utilities within demolition areas.
 15. Cap and identify abandoned utilities at termination points when utility is not completely removed. Annotate Record Drawings indicating location and type of service for capped utilities remaining after demolition.
 16. Demolish in orderly and careful manner. Protect existing structure and supporting structural members.
 17. Remove demolished materials from site except where specifically noted otherwise. Do not burn or bury materials on site.
 18. Remove materials as Work progresses. Upon completion of Work, leave areas in clean condition.
 19. Remove temporary Work.
- F. When suspended ceiling (or portions thereof) are indicated to be removed; unless indicated otherwise:
1. Remove all items attached to the surfaces of the ceiling to be removed.

3.03 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove debris, rubbish and other materials resulting from the removals and demolitions from the building immediately; transport and legally dispose of materials off-site. Disposal method shall be in accordance with City, State, and Federal regulations.
- B. Do not store, sell, or burn materials on the property.

3.04 CLEAN-UP AND REPAIR

- A. Upon completion of removals and demolition Work, remove tools, equipment and all remaining demolished materials from the site.

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- B. Repair all damaged areas caused by the removals and demolition Work. Repair adjacent construction or surfaces soiled or damaged by selective demolition work.
- C. All areas in which Work was performed under this Section shall be left "broom-clean."

3.05 OWNERSHIP OF MATERIALS

- A. All equipment, materials, and items removed shall remain the property of the City of New York, if desired; equipment, material and items not desired to be re-used or retained by the Commissioner shall be removed from the site by the Contractor. The Commissioner will designate which equipment, materials and items will be retained.

END OF SECTION

SECTION 028013 – GENERAL CONTRACTOR WORK
ALLOWANCE FOR INCIDENTAL ASBESTOS ABATEMENT

1.01 SCOPE FOR ASBESTOS ABATEMENT WORK

- A. The "General Conditions" apply to the work of this Section.
- B. The Asbestos abatement contractor shall remove asbestos containing materials as needed to perform the other work of this Contract when discovered during the course of work. When required, the Asbestos abatement contractor shall replace the ACM with non-asbestos containing materials. An allowance of **\$15,000.00** for the **General Contractor** is herein established for this incidental work when so ordered and authorized by the Commissioner.
- C. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE RULES AND REGULATIONS OF THE ASBESTOS CONTROL PROGRAM AS PROMULGATED BY TITLE 15 CHAPTER I OF RCNY AND NEW YORK STATE DEPARTMENT OF LABOR INDUSTRIAL CODE RULE 56 CITED AS 12 NYCRR, PART 56 WHICHEVER IS MORE STRINGENT AS PER LATEST AMENDMENTS TO THESE LAWS AND AS MODIFIED HEREIN BY THESE SPECIFICATIONS.
- D. ALL DISPOSAL OF ASBESTOS CONTAMINATED MATERIAL SHALL BE PER LOCAL LAW 70/85.
- E. THE ASBESTOS ABATEMENT CONTRACTOR'S ATTENTION IS DIRECTED TO THE FACT THAT CERTAIN METHODS OF ASBESTOS ABATEMENT ARE PROTECTED BY PATENTS. TO DATE, PATENTS HAVE BEEN ISSUED WITH RESPECT TO "NEGATIVE PRESSURE ENCLOSURE" OR "NEGATIVE-AIR" OR "REDUCED PRESSURE" AND "GLOVE BAG".
- F. THE ASBESTOS ABATEMENT CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR AND SHALL HOLD THE DEPARTMENT OF DESIGN AND CONSTRUCTION AND THE CITY HARMLESS FROM ANY AND ALL DAMAGES, LOSSES AND EXPENSES RESULTING FROM ANY INFRINGEMENT BY THE ASBESTOS ABATEMENT CONTRACTOR OF ANY PATENT, INCLUDING BUT NOT LIMITED TO THE PATENTS DESCRIBED ABOVE, USED BY THE ASBESTOS ABATEMENT CONTRACTOR DURING PERFORMANCE OF THIS AGREEMENT.
- G. "Asbestos" shall mean any hydrated mineral silicate separable into commercially usable fibers, including but not limited to chrysotile (serpentine), amosite (cumingtonite-grunerite), crocidolite (riebeckite), tremolite, anthrophyllite and actinolite.

- H. Prior to starting, the Asbestos abatement contractor must notify the Commissioner of the Department of Design and Construction if he/she anticipates any difficulty in performing the Work as required by these Specifications. The Asbestos abatement contractor is responsible to prepare and submit all filings, notifications, etc. required by all City, State and Federal regulatory agencies having jurisdiction.

The Asbestos abatement contractor is responsible for submitting the Asbestos Project Notification Form (ACP-7 Form) to the Department of Environmental Protection, Asbestos Control Program, as per Title 15, Chapter I of RCNY and to the NYSDOL as per Industrial Code Rule 56.

The Asbestos abatement contractor is responsible for preparing, and submitting Asbestos Variance Application (ACP-9). If a Variance is required, the Asbestos abatement contractor is responsible to retain a NYSDOL Asbestos Project Designer, as defined in Title 15, Chapter 1 of the RCNY to prepare and submit the required variance.

The General contractor is responsible for preparing and submitting an Asbestos Abatement Permit and/or Work Place Safety Plans (WPSP) that may be required for the completion of the Contract or incidental work. If such plans are required, the Asbestos abatement contractor is responsible to retain a NYSDOL Licensed Design Professional as defined in Title 15, Chapter 1 of the RCNY to prepare and submit the required plans.

The Asbestos abatement contractor is responsible for the submission of all required documents to the NYCDEP to acquire the appropriate Asbestos Project Conditional Closeout (ACP-20) and/or Asbestos Project Completion Forms (ACP-21) on a timely basis for the completion of the incidental work encountered under this contract.

The Asbestos abatement contractor will be required to attend an on-site job meeting with the Construction Project Manager prior to the start of work to examine conditions and plan the sequence of operations, etc.

The Asbestos abatement contractor shall have a NYSDOL/NYCDEP Asbestos Supervisor onsite to oversee the work and conduct a final visual inspection as required by both Title 15, Chapter 1 of the RCNY and NYSDOL Industrial Code Rule 56.

- I. All work shall be done during regular working hours unless the Asbestos abatement contractor requests authorization to work in other than regular working hours and such authorization is granted by the Commissioner. (Regular work hours are those hours during which any given facility, in which work is to be done, is customarily open and functioning, normally between the hours of 8:00 A.M. and 4:00 P.M. Monday - Friday.) If such work schedule is authorized by the Commissioner, the work shall be done at no additional cost to the City.

- J. The Commissioner may order that work be done in other than regular working hours as herein by defined and this order may require the Asbestos abatement contractor to pay premium or overtime wages to complete the work. If the Commissioner orders work in other than regular working hours, the Asbestos abatement contractor shall multiply the unit price for that portion of the work requiring premium wages by 1.50 when computing payment in accordance with Paragraph 1.09. All requests for premium payment must be supported by certified payroll sheets and field sheets approved by the Construction Project Manager.

1.02 QUALIFICATIONS OF ASBESTOS ABATEMENT CONTRACTOR

- A. Requirements: The asbestos abatement contractor must demonstrate compliance with the special experience requirements set forth in subparagraphs (1) through (5) below. The asbestos abatement contractor must, submit documentation demonstrating compliance with all listed requirements. Such documentation shall include without limitation, all required licenses, certificates, and documentation.
1. The asbestos abatement contractor must, whether an individual, corporation, partnership, joint venture or other legal entity, must demonstrate for the three year period prior to the work, that it has been licensed by the New York State Department of Labor, as an "Asbestos abatement contractor".
 2. The asbestos abatement contractor must, for the three year period prior to the work, have been in the business of providing asbestos abatement services as a routine part of its daily operations.
 3. The asbestos abatement contractor proposing to do asbestos abatement work must be thoroughly experienced in such work and must provide evidence of having successfully performed and completed in a timely fashion at least five (5) asbestos abatement projects of similar size and complexity. The aggregate cost of these projects must be at least \$250,000.00 in each of the three years.
 4. For each project submitted to meet the experience requirements set forth above, the asbestos abatement contractor must submit the following information for the project; name and location of the project; name title and telephone number of the owner or the owner's representative who is familiar with the asbestos abatement contractor's work, brief description of the work completed as a prime or sub-asbestos abatement contractor; amount of contract or subcontract and the date of completion.
 5. The asbestos abatement contractor must demonstrate that it has the financial resources, supervisory personnel and equipment necessary to carry out the work and to comply with the required performance schedule,

taking into consideration other business commitments. The asbestos abatement contractor must submit such documentation as may be required by the Department of Design and Construction to demonstrate that it has the requisite capacity to perform the required services of this contract.

- B. Insurance Requirements: The asbestos abatement contractor must provide asbestos liability insurance in the following amount: 1 million dollars per occurrence, 2 million dollars aggregate (combined single limit). The City of New York shall be named as an additional insured on such insurance policy.
- C. Throughout the specifications, reference is made to codes and standards which establish qualities and types of workmanship and materials, and which establish methods for testing and reporting on the pertinent characteristics thereof.

1.03 ASBESTOS ABATEMENT CONTRACTOR RESPONSIBILITIES

The Asbestos abatement contractor will visit the subject location within one (1) working day of notification to ascertain actual work required. If the project is identified as being "urgent", then work shall commence no later than 48 hours from the time of notification. In this event, the asbestos abatement contractor shall immediately notify when applicable EPA NESHAPS Coordinator, NYSDOL Asbestos Control Bureau and NYCDEP Asbestos Control Program of start of the work and file the necessary Asbestos Notifications and any applicable Variance Applications with the regulatory agencies cited above.

In the event that the project is not classified as "urgent" the Asbestos abatement contractor shall notify the EPA NESHAPS Coordinator, NYSDOL and NYCDEP by submitting the requisite asbestos project notification forms, postmarked 10 days before activity begins if 260 linear feet or more and/or 160 square feet or more of asbestos containing material will be disturbed.

The following information must be included in the notification:

- A. Name and address of building City or operator;
- B. Project description:
 - 1. Size - square feet, number of linear feet, etc;
 - 2. Age - date of construction and renovations (if known);
 - 3. Use - i.e., office, school, industrial, etc.
 - 4. Scope - repair, demolition, cleaning, etc.
- C. Amount of asbestos involved in work and an explanation of techniques used to determine the amount;

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- D. Building location/address, including Block and Lot numbers;
- E. Work schedule including the starting and completion dates;
- F. Abatement methods to be employed;
- G. Procedures for removal of asbestos-containing material;
- H. Name, title and authority of governmental representative sponsoring project.

1.04 WORK INCLUDED IN UNIT PRICE

The Asbestos abatement contractor will be paid a basic unit price of **\$25.00** per square feet for the removal and disposal of asbestos containing material and replacement of the same with non-asbestos containing materials.

Unit price shall include all costs necessary to do the work of this Contract, including but not limited to: labor, materials, equipment, utilities, disposal, insurance, overhead and profit.

1.05 AIR MONITORING – ASBESTOS ABATEMENT CONTRACTOR

- A. "Air Sampling" shall mean the process of measuring the fiber content of a known volume of air collected during a specific period of time. The procedure utilized for asbestos follows the NIOSH Standard Analytical Method 7400 or the provisional transmission electron microscopy methods developed by the USEPA and/or National Institute of Standard and Technology which are utilized for lower detectability and specific fiber identification.
- B. Air monitoring of Asbestos abatement contractor's personnel will be performed in conformance with OSHA requirements, (All costs associated with this work are deemed included in the unit price.).
- C. Qualifications of Testing Laboratory:

The industrial hygiene laboratory shall be a current proficient participant in the American Industrial Hygiene Association (AIHA) PAT Program. The laboratory identification number shall be submitted and approved by the City. The laboratory shall be accredited by the AIHA and New York State Department of Health Environmental Laboratory Approval Program (ELAP).

Note: Work area air testing and analysis before, during and upon completion of work (clearance testing) will be performed by a Third Party Air Monitor under separate Contract with the City.

1.06 THIRD PARTY MONITORING AND LABORATORY

- A. The NYCDDC, at its own expense, will employ the services of an independent Third Party Air Monitoring Firm and Laboratory. The Third Party Air Monitor will perform air sampling activities and project monitoring at the Work Site.
- B. The Laboratory will perform analysis of air samples utilizing Phase Contrast Microscopy (PCM) and/or Transmission Electron Microscopy (TEM).
- C. The Third Party Air Monitoring Firm and the designated Project Monitor shall have access to all areas of the asbestos removal project at all times and shall continuously inspect and monitor the performance of the Asbestos abatement contractor to verify that said performance complies with this Specification. The Third-Party Air Monitor shall be on site throughout the entire abatement operation.
- D. The NYCDDC will be responsible for costs incurred with the Third Party Air Monitoring Firm and laboratory work. Any subsequent additional testing required due to limits exceeded during initial testing shall be paid for by the Asbestos abatement contractor.

1.07 PAYMENT REQUEST DOCUMENTATION

- B. The following information shall be included for each payment request:
 - 1. Description of work performed.
 - 2. Linear footage and pipe sizes involved.
 - 3. Square footage for boiler & breaching insulation removed.
 - 4. Square footage of non pipe and boiler areas removed, patched, enclosed, sealed, or painted.
 - 5. Square footage of encapsulation, sealing, patching, and painting involved.
 - 6. Total cost associated with compliance with the assigned task.
 - 7. Architectural, Electrical, HVAC, Plumbing, etc. work incidental to the Asbestos Abatement Work.
 - 8. A certified copy (in form 4312-39) to the Comptroller or Financial Officer of the New York City to the effect that the financial statement is true.
 - 9. A signed copy (in form 6506q-6) of certificate of compliance with non-discriminatory provisions of the Contract.

- 10. Attach a copy of valid workmen compensation insurance.
 - 11. Valid asbestos insurance per occurrence.
 - 12. General liability insurance when required.
- C. Each payment request shall include a grand total for all work completed that billing period, the landfill waste manifests and a copy of waste transporter permit. The Department of Design and Construction will inspect the work performed, review the cost and approve or disapprove requests for payment.
- D. EXPOSURE LOG: With this final payment, the Asbestos abatement contractor shall submit a listing of the names and social security numbers of all employees actively engaged in the abatement work of this Contract. This list shall include a summary showing each part of the abatement work in which the employee was engaged and the dates thereof.

1.08 QUANTITY CALCULATIONS

In order to determine the square footage involved for the various pipe sizes of pipe insulation that might be encountered, the following table is to be used.

PIPE INSULATION SIZE O.D.	PIPE SIZE O.D.	SQUARE FOOTAGE PER LINEAR FOOT
2-1/2"	1/2"	0.65
2-3/4"	3/4"	0.72
3"	1"	0.79
3-1/4"	1-1/4"	0.85
3-1/2"	1-1/2"	0.92
4"	2"	1.05
4-1/2"	2-1/2"	1.18
5"	3"	1.31
6"	3-1/4"	1.57
7"	3-1/2"	1.83
8"	4"	2.09
9"	5"	2.36
10"	6"	2.62
12"	8"	3.14
14"	10"	3.67
16"	12"	4.19
18"	14"	4.71

1.09 METHOD OF PAYMENT

Payment shall be made in accordance with Items A through R below. Payment shall be calculated based on the actual quantity of the item performed by the asbestos abatement

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contractor, times the unit price specified below. Credits may apply to certain times, as specified below.

- A. **REMOVAL, DISPOSAL AND REPLACEMENT OF ASBESTOS CONTAINING PIPE INSULATION:** Actual linear footage, multiplied by the square footage factor listed for the respective pipe size in Section 1.08, multiplied by the unit price in Section 1.04.

EXAMPLE: 100 lin.ft. of 1/2" pipe and 100 lin.ft. of 6" pipe, including elbows, tees. Flanges, etc.

$100 \times 0.65 = 65 \text{ sq.ft.}$ $65 \times \text{unit price} = \text{Payment}$

$100 \times 2.62 = 262 \text{ sq.ft.}$ $262 \times \text{unit price} = \text{Payment}$

- B. **REMOVAL, DISPOSAL AND REPLACEMENT OF BOILER INSULATION:** (all types including Silicate Block and including the removal/replacement of metal jacketing) Payment shall be made at 1.5 times the unit price per square foot.

EXAMPLE: Item B. removal and replacement of 1000 S.F. of boiler insulation (incl. Silicate block)

$1000 \text{ S.F.} \times (1.5) \times \text{the Unit Price} = \text{Payment}$

- C. **REMOVAL, DISPOSAL AND REPLACEMENT OF TANK INSULATION:** (all types including removal/replacement of metal jacketing) Payment shall be made at 1.5 times the unit price per square foot.

- D. **REMOVAL, DISPOSAL AND REPLACEMENT OF BOILER UPTAKE, & BREACHING INSULATION:** (all types including stiffening angles and wire lath) Payment shall be made at 2.0 times the unit price per square foot.

- E. **REMOVAL, DISPOSAL AND REPLACEMENT OF DUCT INSULATION:** Payment shall be made at 1.0 times the unit price per square foot.

- F. **REMOVAL, DISPOSAL AND REPLACEMENT OF SOFT ASBESTOS CONTAINING MATERIAL:** (Including sprayed-on fire proofing and sound proofing) Payment shall be made at 1.0 times the unit price per square foot of surface area. Area of irregular surfaces must be calculated and confirmed with DDC representative.

- G. **ACOUSTIC PLASTER REPAIR AND/OR ENCAPSULATION:** Payment shall be made at 0.5 times the unit price per square foot.

- H. **PATCHING OR REPAIR** of items listed in A through F will be paid at 0.33 times the unit price per square foot.

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- I. **REMOVAL, DISPOSAL AND REPLACEMENT OF WATERPROOFING ASBESTOS CONTAINING MATERIAL:** (including friable and non-friable waterproofing material from interior and exterior walls, floors, foundations, penetrations, louvers, vents and openings other than windows, doors and skylights) Payment shall be made at 0.5 times the unit price per square foot.
- J. **REMOVAL, DISPOSAL AND REPLACEMENT OF ASBESTOS CONTAINING ELECTRICAL WIRING INSULATION:** (including friable and non-friable wiring insulation) Payment shall be made at 0.33 times the unit price per square foot.
- K. **PAINTING:** Payment shall be made at 0.05 times the unit price per square foot.
- L. **REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING PLASTER:** from ceilings and walls, including any wire lath and disposal as asbestos containing waste. Payment shall be made at 0.80 times the unit price per square foot.
- M. **REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING FLOOR TILES, CEILING TILES, TRANSITE PANELS:** (including any adhesive, glue, mastic and/or underlayment) and disposal as asbestos containing waste. Payment shall be made at 0.40 times the unit price per square foot. If multiple layers are discovered, each additional layer shall be paid at 0.20 times the unit price per square foot.
- N. **ADDITIONAL CLEAN UP/HOUSEKEEPING OF WORK AREA:** (excluding pre-cleaning of work area required by regulations) HEPA vacuuming and wet cleaning of asbestos contaminated surface. Payment shall be made at 0.20 times the unit price per square foot. When GLOVE BAG is employed to remove ACM, cost of HEPA vacuuming and wet cleaning of floor area up to 3 feet on each side of glove-bag shall be included in unit price and no extra payment will be made.
- O. **REMOVAL, DISPOSAL OF ASBESTOS-CONTAINING ROOFING MATERIAL:** including mastic, flashing and sealant compound and provide temporary asbestos-free roof covering consisting of one layer of rolled roofing paper sealed with asphaltic roofing compound. Payment shall be made at 0.8 times the unit price per square foot. Credit at a rate of 0.33 times the unit price will be taken for each square foot of temporary roof covering which the Asbestos abatement contractor is directed not to install.
- P. **PICK-UP AND DISPOSAL OF GROSS DEBRIS:** (excluding any waste generated from abatement under Item A-R) at a rate of \$150 per cubic yard for asbestos contaminated waste and \$75 per cubic yard for non-asbestos contaminated waste. This cost includes all labor and material cost associated with work.

- Q. **REMOVAL OF ASBESTOS-CONTAINING BRICK, BLOCK, MORTAR, CEMENT OR CONCRETE:** along with all surfacing materials including wire lath and/or other supporting structures and disposal as ACM waste. Payment shall be made at a rate of \$25.00 per cubic foot of material removed.
- R. **REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING WINDOW/DOOR CAULKING:** including friable and non-friable caulking, weather-stripping, glazing, sealants or other waterproofing materials applied to windows, doors, skylights, etc. Payment shall be made at the rate of \$400.00 per opening regardless of size or configuration. This cost includes labor, consumable materials, set-up/breakdown, removal and disposal, as required.

Note 1: CREDIT: For items listed in A through F, a credit at a rate of 0.33 times the unit price, times the respective multiplier (for each item) will be taken for each square foot of insulation which the asbestos abatement contractor is not directed to reapply.

Note 2: MINIMUM PAYMENT: The minimum payment per call at any individual job sites or various job sites during the same day will be eight hundred dollars (\$800.00).

Note 3: All payments shall be made as described in paragraph 1.09 herein.

Note 4: WORKING HIGHER THAN 12 FEET ABOVE FLOOR LEVEL OR WORK REQUIRING COMPLEX SCAFFOLDING OR CONSTRUCTION WORK PLATFORMS: Provisions are made in this Contract to compensate the Asbestos abatement contractor for work performed in locations that are difficult to access due to work at elevations that are significantly higher than the normal work level. The unit price for these items will be paid at 1.20 times the unit price described in Paragraphs 1.09, A through R for those portions of the work that are more than twelve (12) feet above the grade for that would be judged as the normal working level.

1.10 GUARANTEE

- A. Work performed in compliance with each task shall be guaranteed for a period of one year from the date the completed work is accepted by the Department of Design and Construction.
- B. The Commissioner of The Department of Design and Construction will notify the Asbestos abatement contractor in writing regarding defects in work under the guarantee.

1.11 OCCUPANCY OF SITE NOT EXCLUSIVE

Attention is specifically drawn to the fact that contractors, performing the work of other Contracts, may be brought upon any of the work sites of this Contract. Therefore, the Asbestos abatement contractor shall not have exclusive rights to any site of his work and shall fully cooperate and coordinate his work with the work of other contractors who may

be brought upon any site of the work of this Contract. This paragraph applies to those areas outside the regulated Work Area as defined by Title 15, Chapter I of RCNY.

1.12 SUBMITTALS

A. Pre-Construction Submittals:

1. Attend a pre-construction meeting scheduled by the City of New York Department of Design and Construction. This meeting shall also be attended by a designated representative of the City of New York third party air monitoring firm, facility manager and the Construction Project Manager. At this meeting, the Asbestos abatement contractor shall present three copies of the following items:
 - a. Asbestos abatement contractor's scope of work, work plan and schedule.
 - b. Asbestos project notifications, approved variances and plans to Government Agencies.
 - c. Copies of Permits, clearance and licenses if required.
 - d. Schedules: the Asbestos abatement contractor shall provide to the Construction Project Manager a copy of the following schedules for approval. Once approved, schedules shall be maintained and updated as received. Asbestos abatement contractor shall post a copy of all schedules at the site:
 - (1) A construction schedule stating critical dates of the project including, but not limited to, mobilization, Work Area preparation, demolition, gross removal, fine cleaning, encapsulation, inspections, clearance monitoring, and phase of refinishing and final inspections. The schedule shall be updated biweekly, at a minimum.
 - (2) A schedule of staffing stating number of workers per shift per activity, name and number of supervisor(s) per shift, shifts per day, and total days to be worked.
 - (3) Submit all changes in schedule or staffing to the Construction Project Manager prior to implementation.
 - e. Written description of emergency procedures to be followed in case of injury or fire. This section must include evacuation procedures, source of medical assistance (name and telephone number to nearest

hospital) and procedures to be used for access by medical personnel (examples: first aid squad and physician). NOTE: Necessary Emergency Procedures Shall Take Priority Over All Other Requirements of These Specifications.

- f. Material Safety Data Sheets (MSDS) for encapsulants, sealants, firestopping foam, cleaners/disinfectants, spray adhesive and any and all potentially hazardous materials that may be employed on the project. No work involving the aforementioned will be allowed to proceed until MSDS are reviewed.
- g. Worker Training and Medical Surveillance: The Asbestos abatement contractor shall submit a list of the persons who will be employed by him /her to perform the removal work. Present evidence that workers have received proper training required by the regulations and the medical examinations required by OSHA 29 CFR 1926.1101.
- h. Logs: Specimen copies of daily progress log, visitor's log, and disposal log.
 - (1) The Asbestos abatement contractor shall provide a permanently bound log book of minimum 8-1/2" x 11" size at the entrance to the Worker and Waste Decontamination enclosure system as hereinafter specified. Log book shall contain on title page the project name, name, address and phone number of the Asbestos abatement contractor; name, address and phone number of Asbestos abatement contractor and City's third party air monitoring firm; emergency numbers including, but not limited to local Fire/Rescue Department. Log book shall contain a list of personnel approved for entry into the Work Area.
 - (2) All entries into the log shall be made in non-washable, permanent ink and such pen shall be strung to or otherwise attached to the log to prevent removal from the log-in area. Under no circumstances shall pencil entries be permitted. Any significant events occurring during the abatement project shall be entered into the log. Upon completion of the job, the Asbestos abatement contractor shall submit the logbook containing a day-to-day record of personnel log entries countersigned by the Construction Project Manager every day.
- i. Worker's Acknowledgments: Submit statements signed by each employee that the employee has received training in the proper handling of ACM, understands the health implications and risks

involved; and understands the use and limitations of the respiratory equipment to be used.

B. During Construction Submittals:

1. Security and safety logs showing names of person entering workspace, date and time of entry and exit, record of any accident, emergency evacuation, and any other safety and/or health incident.
2. Progress logs showing the number of workers, supervisors, hours of work and tasks completed shall be submitted daily to the Construction Project Manager.
3. Floor plans indicating Asbestos abatement contractor's current work progress shall be submitted for review by the Construction Project Manager.
4. All Asbestos abatement contractors' air monitoring and inspection results.

C. Project Closeout Submittals:

Upon completion of the project and as a condition of acceptance, the Asbestos abatement contractor shall present two copies of the following items, bound and indexed:

1. Lien Waivers from Asbestos abatement contractor, Sub-Asbestos abatement contractors and Suppliers,
2. Daily OSHA air monitoring results,
3. All Waste Manifests (Asbestos and Construction Debris), seals and disposal logs,
4. Field Sign-In/Sign-Out Logs for every shift,
5. Copies of all Building Department Forms and Permits,
6. A Letter of Compliance stating that all the work on this project was performed in accordance with the Specifications and all applicable Federal, State and Local regulations,
7. All Warranties as stated in the Specifications,
 - a. Fully executed disposal certificates and transportation manifest.

8. Project Record: The Asbestos abatement contractor shall maintain a project record for all small and large asbestos projects. During the project, the project record shall be kept on site at all times. Upon completion of the project, the project record shall be maintained by the building owner. The project record shall be submitted to DDC as part of the close out documents. The project record shall consist of:
 - a. Copies of licenses of all asbestos abatement contractors involved in the project;
 - b. Copies of NYCDEP and NYSDOL supervisor and handler certificates for all workers engaged in the project;
 - c. Copies of all project notifications and reports filed with NYCDEP, NYSDOL and USEPA for the project, with any amendments or variances;
 - d. Copies of all asbestos abatement permits, including associated approved plans and work place safety plan;
 - e. A copy of the air sampling log and all air sampling results;
 - f. A copy of the abatement asbestos abatement contractor's daily log book;
 - g. Copies of all asbestos waste manifests;
 - h. A copy of all Project Monitor's Reports (ACP-15).
 - i. A copy of each ATR-1 Form completed for the asbestos project (if required).
 - j. A copy of each Asbestos Project Conditional Closeout Report (ACP-20) if required.
 - k. A copy of the Asbestos Project Completion Form (ACP-21).

1.13 PROTECTION OF FURNITURE AND EQUIPMENT

Cover all furniture and equipment that cannot be removed from Work Areas. Movable furniture and equipment will be removed from Work Areas by the Asbestos abatement contractor prior to start of work. At the conclusion of the work (after final air testing), the Asbestos abatement contractor will remove all plastic covering on walls, floors, furniture, equipment and reinstall furniture and equipment. He shall remove and store all sheaths, curtains and drapes, and reinstall same following final clean up.

1.14 UTILITIES

A. General:

All temporary facilities shall be subject to the approval of the Commissioner. Prior to starting work at any site, locations and/or sketches (if required) of temporary facilities must be submitted to the Construction Project Manager for the required approval.

B. Water:

The Department of Design and Construction will furnish all water needed for construction, at no cost to the Asbestos abatement contractor in buildings under their jurisdiction. However, it is the responsibility of the Asbestos abatement contractor to ensure that hot water is provided for showering in the decontamination unit. The Asbestos abatement contractor shall furnish, install and maintain any needed equipment to meet these requirements at his own expense.

C. Electricity:

The Department of Design and Construction will furnish all electricity needed for construction, at no cost to the Asbestos abatement contractor in a building, under their jurisdiction. The Asbestos abatement contractor is responsible for routing the electric power to the abatement Work Area.

All temporary lighting and temporary electrical service for Work Area shall be in weatherproof enclosures and be ground fault protected.

D. In leased spaces, arrangements for water supplies and electricity must be made with the landlord. However, all such arrangements must be made through and are subject to approval of the Department of Design and Construction. Utilities will be provided at no cost to the Asbestos abatement contractor. However, it is the Asbestos abatement contractor's (or the General contractor's) responsibility to furnish and install a suitable distribution system to the Work Area. This system will be provided at no cost to the City.

1.15 FEES

The Asbestos abatement contractor shall be responsible for any and all fees or charges imposed by Local, State or Federal Law, Rule and Regulation applicable to the work specified herein, including fees or charges which may be imposed subsequent to the date of the Bid opening.

END OF SECTION

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SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Furnish material, equipment, labor, services required to provide for cast-in-place concrete. Work includes but is not limited to structural, sitework, slabs, concrete fire protection, equipment pads, and other items listed herein. Allow ample time and facility for the Work of other Divisions to be installed.

1.02 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION - Not Used

1.03 RELATED SECTIONS - Not Used

1.04 REFERENCES

References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

- A. American Society of Testing and Materials (ASTM) standards, latest editions.
- C31 Standard Practice for Making and Curing Concrete Test Specimens in the Field.
 - C33 Standard Specifications for Concrete Aggregates.
 - C39 Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
 - C42 Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
 - C78 Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Three-point Loading)
 - C94 Standard Specification for Ready-Mixed Concrete.
 - C127 Standard Test Method for Density, Relative Density (Specific Gravity) and Absorption of Course Aggregate.
 - C131 Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - C138 Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete.

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- C143 Standard Test Method for Slump of Hydraulic Cement Concrete.
- C150 Standard Specification for Portland Cement.
- C172 Standard Method of Sampling Freshly Mixed Concrete.
- C173 Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
- C192 Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory.
- C231 Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
- C260 Standard Specifications for Air-Entraining Admixtures for Concrete.
- C309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
- C330 Standard Specification for Lightweight Aggregates for Structural Concrete.
- C387 Standard Specification for Packaged, Dry, Combined Materials for Mortar and Concrete.
- C494 Standard Specification for Chemical Admixture for Concrete.
- C496 Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens.
- C567 Standard Test Method for Density of Structural Lightweight Concrete.
- C685 Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing.
- C1315 Standard Specification for Liquid-Forming Compounds Having Special properties for Curing and Sealing Concrete
- E154 Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs
- E329 Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials used in Construction
- E1643 Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs
- E1745 Standard Specification for Plastic Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs

B. American Concrete Institute (ACI) standards, latest editions.

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- ACI 117 Standard Tolerances for Concrete Construction and Materials
- ACI 211.1 Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
- ACI 211.2 Standard Practice for Selecting Proportions for Structural Lightweight Concrete.
- ACI 212.3R Chemical Admixtures for Concrete.
- ACI 214 Evaluation of Results of Tests Used to Determine the Strength of Concrete.
- ACI 301 Specifications for Structural Concrete for Buildings.
- ACI 302.1R Guide for Concrete Floor and Slab Construction.
- ACI 304R Guide for Measuring, Mixing, Transporting and Placing Concrete.
- ACI 305R Hot Weather Concreting.
- ACI 306R Cold Weather Concreting.
- ACI 308 Standard Practice for Curing Concrete.
- ACI 309R Guide for Consolidation of Concrete.
- ACI 311.4R Guide for Concrete Inspection.
- ACI 318-02 Building Code Requirements for Reinforced Concrete (With modifications per Section BC 1908 of the 2008 NYC Building Code).

1.05 DEFINITIONS

A. Exposed to view

Situated so that it can be seen from eye level from a public location. A public location is that which is accessible to persons not responsible for operation or maintenance of the building.

B. Lightweight concrete

Concrete intentionally made to have low density by use of lightweight aggregate conforming to ASTM C330 and required to have an air-dry unit weight less than .115 lb/ft³.

C. Normal weight concrete

Concrete for which density is not a controlling attribute, made with aggregates of the types covered by ASTM C33 and usually having unit weights in the range of 135 to 160 lb/ft³.

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1.06 DESIGN REQUIREMENTS

- A. Performance Characteristics:
1. Interior slabs: Normal weight concrete with a minimum compressive strength of 4000 psi, non-air entrained, and a maximum water to cement ratio of 0.45.
 2. Exterior slabs on grade, exposed to the elements: Normal weight concrete with a minimum compressive strength of 4000 psi, air entrained, and a maximum water to cement ratio of 0.40.
 3. Interior slabs of superstructure: Lightweight concrete with a minimum compressive strength of 4000 psi, air-entrained.

1.07 SUBMITTALS

- A. Product Data
Submit manufacturers' information for the following:
1. Admixtures
 2. Curing compounds
 3. Hardener
 4. Bonding Agent
 5. Vapor barrier
- B. Samples
Submit samples of the following items
1. Vapor Barrier
- C. Quality Control Submittals
1. Design Data: Submit design mixes for concrete, including list of admixtures to be used, to the Testing Agency, the Special Inspector, and the Commissioner. Design mix for lightweight concrete shall include both the dry and saturated (SSD) weights of the aggregate.
 2. Test Reports: Strength Test Report for preliminary trial mix (with all admixtures).
 3. Certificates
 - a. Building Department form TR3, signed and sealed by the licensed concrete laboratory and concrete producer.
 - b. Admixture manufacturer's certificate stating that the chloride content of the admixture will not exceed 0.05% by weight.

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- c. Concrete laboratory license number and certification of meeting ASTM E329 standards.
 - d. Concrete producer's certificate stating the plant and trucks are NYSDOT approved.
 - e. Concrete producer's Computer Batch Ticket in accordance with Section BC 1905.8.2 of the 2008 NYC Building Code must be presented at site before concrete is placed for every load of concrete delivered.
4. Manufactures' Instructions
Waterstop manufacturer's instructions for proper installation of waterstop, including manner in which splices are to be made.
 5. Contractor Qualifications
Provide proof of Installer and Producer qualifications specified under "Quality Assurance".

1.08 QUALITY ASSURANCE

- A. Qualifications
 1. Concrete Installer: Company specializing in performing the Work of this Section shall have three years minimum experience on successful projects of similar size.
 2. Concrete Producer: Company specializing in the production of concrete shall be certified by the National Ready Mixed Concrete Association (NRMCA) and shall have certification by either a New York City Agency or the NYS Department of Transportation. The plant shall use NYSDOT approved trucks and drivers shall be certified by the NRMCA.
 3. Concrete Laboratory: Concrete laboratory providing design mixes shall be New York City licensed and shall meet the requirements of ASTM E329.
- B. Regulatory Requirements
 1. Building Code: Work of this Section shall conform to all requirements of the NYC Building Code and all applicable regulations of governmental authorities having jurisdiction including safety, health, noise, and anti-pollution regulations. Where more severe requirements than those contained in the Building Code are given in this Section, the requirements of this Section shall govern.

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2. Industry Standards: The ACI Standards listed under references apply to Work of this Section. Where more severe requirements than those contained in the Standards are given in this Section or the Building Code, requirements of this Section or the Building Code shall govern. The Contractor shall keep a copy of ACI SP-15 - "Field Reference Manual" at the site.
3. Recommendations or suggestions in the codes and references listed in this Article and under "References" shall be deemed to be mandatory unless they are in violation of the Building Code.

C. **Certifications**

1. Cast-in-Place Concrete shall conform to the material acceptance, certification, and inspection requirements of Sections BC 1701 and BC 1905 of the 2008 NYC Building Code.
2. Cement and aggregate shall be acquired from the same source for all work. If a change in suppliers is required, a new mix submittal must be produced with the new material and submitted for approval.

D. **Coordination**

Coordinate this work with the work of other Divisions so that items to be installed are done so correctly and in proper sequence.

1.09 DELIVERY, STORAGE AND HANDLING

- A. Protect material from the elements and from other damage on the site.
- B. Replace and pay for material and work damaged to the satisfaction of the Commissioner.

1.10 ENVIRONMENTAL REQUIREMENTS

- A. Adequately protect concrete placed during rain, sleet, or snow, or when the mean daily temperature falls below 40°F or rises above 90°F as provided in Article 3.05.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Lightweight Aggregate
 1. Northeast Solite Corporation
 2. Norlite Corporation

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B. Admixtures

1. Euclid Chemical Company, Cleveland, OH 44110
2. Master Builders,
3. Sika Chemical Corporation,
4. Anti Hydro Company,
5. Chem Masters,
6. W.R. Grace & Co.,
7. St. Lawrence Cement Company,

C. Curing Compounds

1. Euclid Chemical Company, Cleveland, OH 44110
2. Master Builders,

D. Vapor Barrier

1. Stego Industries, San Juan Capistrano, CA 92675
2. Reef Industries, Houston, TX 77075
3. W.R. Meadows, Hampshire, IL 60140-0338

E. Bonding Agent

1. Sto Concrete Restoration Division, Atlanta GA
2. Sika Corp, Lyndhurst NJ
3. Euclid Chemical Company, Cleveland, OH 44110

2.02 MATERIALS

A. Cement

Shall conform to ASTM C150 and shall be of the non air-entrained types:

1. Unless otherwise specified or approved by the Commissioner, cement shall be Type I or II.
2. Type II shall be used for exterior pavements.
3. Cement shall not contain ingredients that would result in more than two percent air being entrained in the concrete.

B. Admixtures

1. General

- a. The use of admixtures shall comply with the requirements of Section BC 1903.6 of the 2008 NYC Building Code.
- b. The final soluble chloride content in concrete, percent by weight of cement, due to

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the addition of admixtures and other ingredients shall not exceed 0.05 at 28 days.
All admixtures shall be non-corrosive.

c. The amount of cement required by the Building Code may be reduced by 40% as per the code with the use of slag cement that has been reviewed and approved by the Commissioner.

2. Air-entraining admixture: Shall conform to ASTM C260.
3. Water-reducing admixture: Shall conform to ASTM C494, Type A or D, and contain no more chloride ions than found in drinking water.
4. High range, water-reducing admixture (super-plasticizer): Shall conform to ASTM C494, Type F or G, and contain no more chloride ions than found in drinking water.
5. Water reducing, accelerating admixture: Shall conform to ASTM, Type C or E, and contain no more chloride ions than found in drinking water.
6. Water reducing, retarding admixture: Shall conform to ASTM C494, Type D, and contain no more chloride ions than found in drinking water.
7. Slag cement: ASTM C989, Grade 100 or 120. Shall be GranCem slag cement as manufactured by the St. Lawrence Cement Company.

C. Water

Shall be clean potable water free of injurious foreign matter conforming to the requirements of Section BC 1903.4 of the Building Code.

D. Aggregates

Fine and coarse aggregates shall be regarded as separate ingredients. Each size of coarse aggregate, as well as the combination of sizes when two or more are used, shall conform to the appropriate grading requirements of the applicable ASTM specifications. Maximum size of coarse aggregate shall conform to paragraph 3.3.2 of ACI 318.

1. Aggregates for normal weight concrete shall conform to ASTM C33 and be of Size No.57, No.67 and/or No.8.
2. Aggregates for lightweight concrete shall conform to ASTM C330 and be of sizes 3/4" to No.4, 1/2" to No.4, and/or 3/8" to No.8.

E. Curing Compounds

1. Non-strippable

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- a. Clear Curing and Sealing Compound (A.I.M. Regulations - VOC Compliant, 350 g/l): Liquid type membrane-forming curing compound, clear styrene acrylate type, complying with ASTM C1315, Type I, Class A, 25% solids content minimum. Moisture loss shall be not more than 0.40 Kg/m² when applied at 300 sq. ft./gal. Manufacturer's certification is required.
- b. Curing Compounds shall be "Super Diamond Clear VOX" by The Euclid Chemical Company or "Masterkure 100W" by Master Builders.

F. Bonding Agent

1. Epoxy/acrylic resin that will not form a vapor barrier with the concrete with the following properties:
 - a. Bond strength of 1800 psi in 2 hours when tested in accordance with ASTM C882.
 - b. Flexural strength of 2000 psi in 28 days when tested in accordance with ASTM C78.
 - c. Tensile strength of 600 psi in 28 days when tested in accordance with ASTM C496.
2. Bonding agent shall be "CR246 Sto Bonding and Anti-corrosion Agent" by Sto Concrete Restoration Division, Armatec 110 by Sika Corp, or Corr-bond by Euclid Chemical Company.

G. Vapor Barrier

1. Vapor Barrier shall meet the following properties:
 - a. Minimum 15-mil polyolefin geomembrane.
 - b. Water Vapor Barrier - ASTM E1745, Class A
 - c. Permeance Rating - ASTM E1745/E96 or E1249/E96: 0.018 perms or lower
 - d. Puncture Resistance by ASTM E1745: Class A, minimum 2300 grams
 - e. Tensile Strength by ASTM E1745: Class A, minimum 45 lbf/in
2. Accessories
 - a. High density polyethylene tape with pressure sensitive adhesive
 - b. Pipe boot for piping and conduits constructed from vapor barrier and tape
3. Shall be:
 - a. Stego Wrap 15 mil Vapor Barrier by Stego Industries

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- b. Griffolyn 15 mil Green by Reef Industries
- c. Perminator 15 mil by W.R. Meadows

2.03 MIXES

A. General

Concrete for all parts of the Work shall be of the specified quality capable of being placed without excessive segregation and, when hardened, of developing all characteristics required by the Specifications and Drawings.

B. Strength

Strength requirements given in Part 1 of this Specification are based on 28-day compressive strength (56 days for concrete containing 40% alternate cementitious material - slag), unless high early strength is specified, in which case required strengths are based on 7-day compressive strength (28-day for concrete containing 40% alternate cementitious material - slag).

C. Method of Proportioning

1. Proportion, batch, and mix concrete in accordance with Section BC 1905. The Contractor shall be responsible for, and bear all costs associate with the filing and securing of approvals, of any, for form TR-3: Technical Report Concrete Design Mix, including, but not limited to, engaging the services of a New York City licensed concrete testing laboratory for review and approval concrete mix, testing, signatures and professional seals, etc., compliant with NYC Department of Building requirements, for each concrete mix. Proportion concrete mix in accordance with Section BC 1905.3.
2. Mix designs are specific to material used, concrete producer, and method of placement. Each mix design must be reviewed by the Commissioner and accepted prior to placement along with accompanying TR3 signed by the lab and concrete producer.

D. Normal Weight Concrete

1. Unless otherwise specified, proportion and produce normal weight concrete to have a maximum slump of 4" or less. A tolerance of up to 1" above the indicated maximum shall be allowed for individual batches provided the average for all batches or the most recent 10 batches tested, whichever is

fewer, does not exceed the maximum limit. The slump shall be determined by ASTM C143. Concrete containing High Range Water Reducer shall have a slump not exceeding 9", unless other wise approved by the Commissioner. The concrete shall arrive at the job site at a slump of 2" to 3", be verified, and the HRWR admixture added to increase the slump to the approved level.

2. Where Normal weight concrete is indicated to be air-entrained, provide the following air content for the grading size of coarse aggregate as follows:

- a. No.8.....7¹/₂%
- b. No.57 or 67.....6%

Tolerance on air content as delivered shall be +1.5%.

E. Structural Lightweight Concrete

Lightweight concrete, including concrete used as roof fill and other locations indicated to receive fill, shall conform to the following requirements:

1. Coarse aggregate shall be 100% lightweight aggregate, expanded clay, shale, or slate produced by the rotary kiln method, conforming to the requirements of ASTM C330. Provide 3/8" maximum size coarse aggregate for beam and/or column encasement.
2. The concrete shall not exceed an air dry unit weight of 115 lb/ft³ as measured in accordance with ASTM C567. The wet unit weight of the fresh concrete shall be within +3 lbs of the wet unit weight which is to be determined and established from the preliminary tests or prequalified mixes.
3. Unless otherwise specified, proportion and produce lightweight concrete to have a slump of 3" or less. A tolerance of up to 1" above the indicated maximum shall be allowed for individual batches provided the average for all batches or the most recent 10 batches tested, whichever is fewer, does not exceed the maximum limit. The slump shall be determined by ASTM C143. Concrete containing High Range Water Reducer shall have a slump not exceeding 9", unless other wise approved by the Commissioner. The concrete shall arrive at the job site at a slump of 3" to 4", be verified, and the HRWR admixture added to increase the slump to the approved level.
4. Provide the following air content for the grading size of coarse aggregate as follows:
 - a. 3/8"...4¹/₂ - 7¹/₂%

- b. 3/4" ... 4 - 6%
Tolerance on air content as delivered shall be +1.5%.
- 5. Mix design shall include the dry and saturated (SSD) weights of the lightweight aggregate. The saturated weight shall take into account the internal and surface moisture content that will be in the aggregate at the time of mixing.
- 6. Mix design shall be based on the recommendations of the lightweight aggregate producer.

2.04 SOURCE QUALITY CONTROL

A. Tests

- 1. The Testing Laboratory will review and/or check test proposed materials for compliance with the Specifications prior to construction.
- 2. The Testing Laboratory will perform field tests as work progresses as listed in "Field Quality Control".

B. Inspection

1. Testing Laboratory

- a. A Licensed Concrete Testing Laboratory to inspect batching of the concrete, at the Authorities discretion, and perform all field tests. The Laboratory will perform the following services:
 - 1) Review and/or check-test the Contractor's proposed materials for compliance with the Specifications.
 - 2) Review and/or check-test the Contractor's proposed mix design.
 - 3) Secure production samples of materials at plants or stock-piles during the course of the Work and test for compliance with the Specifications.
 - 4) Perform tests during construction as required by Section BC 1905.6.2 of the 2008 NYC Building Code. The Laboratory will obtain samples at the mixer and when directed by the Engineer at the point of placement by the following methods:
 - a) Secure composite samples in accordance with ASTM C172. Each sample shall be obtained from a

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different batch of concrete on a random basis, avoiding any selection of the test batch other than by a number selected at random before commencement of concrete placement.

- b) Mold and cure specimens from each sample in accordance with ASTM C31 and perform strength tests.
 - b. The Commissioner may assign a qualified concrete technician to be stationed at the batch plant depending on the size of the project or evidence of poor concrete breaks. At least one qualified concrete technician will be stationed at the site to obtain the test specimens.
 - c. The Laboratory will be responsible to and under the supervision of the Special Inspector.
2. Special Inspector
- a. Under the requirements of Section BC 1704.4 a Special Inspector will supervise the testing of the materials and the inspection of concrete construction. The Special Inspector is responsible any required filing with the Building Department, as well as maintaining a log book of the concrete work.
 - b. The Special Inspector will check that all required tests are made and the results submitted and shall have the right to order the Contractor to make such changes of the mix of concrete as required to produce concrete of the necessary strength. The Special Inspector will also report to the Building Department Superintendent any deviation from the requirements of the Code, as indicated by records of inspection and reports of tests.
3. Notification
- a. Notify the Commissioner in writing at least forty-eight hours in advance of each concrete placement. The Commissioner will notify the Testing Laboratory immediately to order out the necessary concrete technicians to cover the work.
 - b. Once the concrete technicians are ordered out and a cancellation follows, the Contractor may be charged for each technician so ordered to appear, unless a cancellation order is

issued to the Laboratory by 3 PM the day before the concrete placement.

- c. During the placement of the concrete, notify the Commissioner immediately of any delay at the concrete plant or at the job site. Where the Commissioner decides to provide a technician at the plant, do not mix concrete or add admixtures unless the Technician is present. Do not add admixtures to be added at the site unless the Technician is present.
4. Contractors Responsibility for Quality Control
 - a. The Contractor will receive a copy of all reports prepared by the Laboratory and/or Special Inspector. Copies of the daily concrete reports prepared by the Special Inspector will be available for reference.
 - b. The Contractor will therefore be afforded an opportunity to review all reports and mix data and submit to the Special Inspector any recommendations in changing the mixes provided they conform to the Code and Specifications. Any testing required because of changes in materials or proportions of the mix requested by the Contractor, as well as any extra testing of concrete or materials occasioned by the failure to meet Specification requirements shall be at the Contractor's expense. The Contractor, at any time, can arrange to have independent tests made at own expense by an approved laboratory and submit the reports and recommendations to the Special Inspector and Commissioner.
 - c. The tests and inspections, as provided in the Code, do not in any way relieve the Contractor of responsibility to construct the Work in accordance with the Drawings and Specifications and to use safe, standard methods of construction at all times, safeguarding the public, workmen, and structure. The Contractor shall be solely responsible for the physical control of the materials and concrete mixes, and shall see that such mix designs, tests, and controls are in accordance with the Code and Specifications. Contractor shall deliver to the testing organization concrete samples for the hardness testing.
 - d. It shall be the Contractor's complete responsibility to adjust, alter, and/or correct any controls necessary in materials and/or concrete operation based upon tests and inspections made by the Commissioner or

the Contractor's independent tests. If, during the course of the concrete operations, a lower water content or more cement is needed per cubic yard above that used in the approved design mix, provide same at no additional cost to the Commissioner.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Prior to placement of concrete, verify that the concrete cover over the reinforcement is that specified on Drawings.
- B. Verify that anchor bolts, reinforcement, and all other embedded items are provided and held securely, positioned accurately, and will not be a detriment to concrete placement.
- C. Examine all adjoining work on which this Work is in anyway dependent for proper installation and workmanship. Report to the Commissioner any condition that prevents the performance of this Work.

3.02 PROTECTION

- A. Protect concrete members on grade and the subgrade from freezing before and after installation. Provide blankets and other items necessary.
- B. Protect adjacent finish materials and previously poured concrete against spatter during concrete placement.
- C. Provide and maintain barricades and safeguards around openings, etc. to protect workmen from injury and to comply with all Building Code, OSHA, and other authorities having jurisdiction regulations.

3.03 PREPARATION

- A. Remove ice, excess water, trash, and rubbish from forms.
- B. Remove hardened concrete from inner surfaces of conveying equipment and all formwork, reinforcement, and dowels.
- C. Prepare previously placed concrete to be in contact with new concrete in the manner described under "Construction Joints".

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- D. Prepare existing concrete to be in contact with new concrete by roughening and cleaning the surface and applying a bonding agent. Surface must be free of laitance. Concrete must be placed after agent cures and within 20 hours of applying bonding agent. If time elapses, apply a new application in accordance with the directions of the manufacturer.
- E. In case a conflict arises between concrete as poured and other Work that requires cutting into concrete beams, columns, walls, or slabs, submit requests to the Commissioner, who will issue instructions accordingly. Cutting of concrete is otherwise prohibited.
- F. Do not place concrete on frozen ground.

3.04 JOINTS AND EMBEDDED ITEMS

A. Construction Joints

- 1. Make joints not shown on Drawings at locations that will least impair the strength of the structure. Such location is subject to the approval of the Commissioner.
- 2. Continue reinforcement across joints. Provide longitudinal keys at least 1½" deep in walls and provide other keys as required. Drawings indicate keys or roughened surface at interface of walls and footings.
- 3. Thoroughly clean concrete surface of oil, grease, and other contaminants and remove all laitance prior to placement of adjoining concrete. Roughen surface of the concrete in an approved manner that will expose the aggregate uniformly to a ¼" amplitude and will not leave laitance, loosened particles of aggregate, or damaged concrete at the surface. Dampen surface immediately prior to placement.
- 4. Construction joints shall be made in accordance with Section BC 1906.8 of the Building Code.

3.05 MIXING AND PLACING CONCRETE

A. General

- 1. Notify the Commissioner at least 48 hours in advance of each concrete placement. Do not place concrete without approval of the Special Inspector.
- 2. Do not allow rainwater to increase mixing water nor damage surface finish.

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3. When placing concrete in cold weather (air temperature below 40°F), concrete shall contain either an accelerating admixture or use Type III cement.

B. Mixing

1. Batch, mix, and transport ready-mixed concrete in accordance with the appropriate sections of ASTM C94 and Section BC 1905.8.2 of the 2008 NYC Building Code. Truck mixers and agitators shall meet the requirements of the Truck Mixers Manufacturer's Bureau or shall comply with Section 8.1.2 of ASTM C94 and shall be NYSDOT approved. All trucks shall have working revolution counters and site gages. Batch all other concretes in accordance with subsection 4.3.1 of ACI 301 only if permitted by the Commissioner and Special Inspector.
2. Batch ready-mixed concrete only in plants that are NRMCA certified and NYSDOT approved. Only plants that are NYSDOT approved with current certification meeting the requirements for certification of the NRMCA for automatic batching and automatic recording will be permitted. Concrete shall be batched by the use of automation.
3. Unless otherwise approved by the Commissioner, concrete shall be deposited within 1½ hours or 300 revolutions of the mixing drum, whichever comes first, after introduction of water to the cement or cement to the aggregate. When the ambient temperature rises above 90°F, the time shall be decreased to 1 hour.
4. Batch lightweight concrete using the saturated weight of aggregate, which shall take into account the internal and surface moisture content.
5. Tempering and control of mixing water
 - a. Mix concrete only in quantities for immediate use. Concrete that has started to set shall not be retempered, but shall be discarded. Water shall not be added at the site.
 - b. For concrete containing HRWR (Superplasticizer), if loss of slump occurs, HRWR may be redosed at the site as long as a "flash set" has not occurred. Redosage procedures must be discussed and approved by the Engineer and the admixture manufacturer at the Pre-Concrete Conference.

6. Weather Conditions

- a. Cold weather (Air Temperatures below 40°F)
 - 1) Concrete shall have either an accelerating admixture or use Type III cement.
 - 2) The temperature of concrete delivered at the site shall conform to the temperature limitations given in **Section 5** of ACI 301.
 - 3) If water or aggregate is heated above 100°F, combine the water with the aggregate in the mixer before cement is added. Cement shall not be mixed with water or with mixtures of water and aggregate having a temperature greater than 100°F.
 - 4) Detailed requirements are given in ACI 306R.
- b. Hot Weather (Air Temperatures above 90°F)
 - 1) Cool the ingredients before mixing, or substitute flake ice or well-crushed ice of a size that will melt completely during mixing for all or part of the mixing water if, due to high temperature, low slump, flash set, or cold joints are encountered.
 - 2) Detailed requirements are given in ACI 305.

7. Admixtures - General

- a. Add all admixtures prior to mixing unless otherwise specified or directed.
- b. Air-entraining admixtures and other chemical admixtures shall be charged into the mixer as solutions and shall be measured by means of an approved mechanical dispensing device. The liquid shall be considered a part of the mixing water. Admixtures that cannot be added in solution may be weighed or may be measured by volume if so recommended by the manufacturer. The accuracy of measurement of any admixture shall be within +3 percent.
- c. If two or more admixtures are used in the concrete, add them separately to avoid possible interaction that might interfere with the efficiency of either admixture or adversely affect the concrete. Do not charge admixtures into the mixer in such a manner that they will come in direct contact with the cement.

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- d. Use of accelerating admixtures or Type III cement shall not relax cold weather placement requirements.
- e. Use of retarding admixtures in hot weather must be approved by the Special Inspector. Use of such admixtures will not relax hot weather placement requirements.

C. Placing

1. General: Place concrete in accordance with ACI 304R, ACI 318, and Sections BC 1905.9 and BC 1905.10 of the 2008 NYC Building Code.

2. Conveying

a. Handle concrete from the mixer to place of final deposit as rapidly as practicable by methods that will prevent separation or loss of ingredients and in a manner that will assure that the required quality of concrete is obtained.

b. Conveying equipment shall be approved and shall be of a size and design such that detectable setting of concrete shall not occur before adjacent concrete is placed. Conveying equipment shall be cleaned at the end of each operation or workday. Conveying equipment and operations shall conform to the following additional requirements:

1) Truck mixers, agitators, and non-agitating units and their manner of operation shall conform to the applicable requirements of ASTM C94.

2) Belt conveyors shall be horizontal or at a slope which will not cause excessive segregation or loss of ingredients. Concrete shall be protected against undue drying or rise in temperature. An approved arrangement shall be used at the discharge end to prevent apparent segregation. Mortar shall not be allowed to adhere to the return length of the belt. Long runs shall be discharged into a hopper or through a baffle.

3) Chutes shall be metal or metal-lined and shall have a slope not exceeding 1 vertical to 2 horizontal and not less than 1 vertical to 3 horizontal. Chutes more than 20' long and chutes not meeting the slope requirements may be used provided they discharge into a hopper before distribution.

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- 4) Pumping or pneumatic conveying equipment shall be of suitable kind with adequate pumping capacity. Pneumatic placement shall be controlled so that segregation is not apparent in the discharged concrete. The loss of slump in pumping or pneumatic conveying equipment shall not exceed 2". Pumping is permitted only if a pump mix is approved. Concrete shall not be conveyed through pipe made of aluminum or aluminum alloy.
3. Depositing: Detailed recommendations are given in ACI 304R.
 - a. General
 - 1) Deposit concrete continuously, or in layers of such thickness that no concrete will be deposited on concrete that has hardened sufficiently to cause the formation of seams or planes of weakness within the section. If a section cannot be placed continuously, locate construction joints at points as provided for in the Drawings, shop drawings, or as approved.
 - 2) Carry out placement at such a rate that the concrete that is being integrated with fresh concrete is still plastic. Do not deposit concrete that has partially hardened or has been contaminated by foreign material.
 - 3) Place concrete in a manner that uniformly distributes the material over the metal deck in order to avoid overloading the deck joints.
 - 4) Remove temporary spreaders in forms when the concrete placing has reached an elevation rendering their service unnecessary. They may remain embedded in the concrete only if made of metal or concrete and if prior approval has been obtained.
 - 5) Placing of concrete in supported elements shall not be started until the concrete previously placed in columns and walls is no longer plastic.
 - b. Segregation: Deposit concrete as nearly as practicable in its final position to avoid segregation due to rehandling or flowing. Do not subject concrete to any procedure that will cause segregation. The maximum drop

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height shall be five feet. Provide drop tubes for placement in forms and other locations where drop height exceeds the indicated maximum.

c. Consolidation

- 1) Consolidation of concrete and the use and type of concrete shall be in accordance with ACI 309R.
 - 2) Where a surface mortar is to be the basis of the finish, the coarse aggregate shall be worked back from the forms with a suitable tool so as to bring a full surface of mortar against the form, without the formation of excessive surface voids.
 - 3) Consolidate all concrete by vibration so that the concrete is thoroughly worked around the reinforcement, around embedded items and into corners of forms, eliminating all air or stone pocket or weakness. Internal vibrators shall be the largest size and most powerful that can be used in the Work, as described in Table 5.1.5 of ACI 309R, with a minimum frequency of 7000 revolutions per minute and shall be operated by competent workmen. Overvibrating and use of vibrators to transport concrete within forms is not permitted. Insert and withdraw vibrators at many points, from 18" to 30" apart. At each insertion, the duration shall be sufficient to consolidate the concrete but not sufficient to cause segregation, generally from 5 to 15 sec duration, and shall reach the bottom of the pour. Keep a spare vibrator on the job site during all concrete placing operations.
4. Cold Weather Concrete Placement and Protection: Detailed requirements are given in ACI 306.

When the mean daily temperature of the atmosphere is less than 40°F during concreting, or within 72 hours there after (or the air temperature is not greater than 50°F for more than one-half of any 24-hr period for a period of 3 consecutive days), follow the procedures outlined in ACI 306R to protect the concrete. Provide a cold weather concreting plan as well as list of equipment and material (e.g. thermometers, blankets) to be used to the Special Inspector. Temperature of the plastic concrete shall be no lower than 55°F. Heat

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all forms, reinforcing steel, and surfaces to receive concrete above the freezing point and keep them completely free of frost, snow, and ice. Protection shall consist of insulating boards, blankets, or heated enclosures. Underside of slabs shall be heated during placement and protection period. Initial protection period shall be as indicated in tables 5.1 and 5.3 of ACI 306R. Maximum temperature drop of concrete surface after protection is removed shall follow table 5.5 of ACI 306R.

5. Hot Weather Placement and Protection: When the mean daily temperature of the atmosphere is over 90°F during concreting, follow the procedures outlined in ACI 305R to protect the concrete.
 - a. All concrete, at the time it is actually deposited in the forms, shall have a temperature not lower than 50°F but never above 90°F.
 - b. Cover reinforcement with water-soaked burlap to cool steel so its temperature will not exceed the ambient air temperature immediately before concrete placement.
 - c. Dry surfaces that are to receive concrete should be wet down before commencing placement of concrete and the temperature of such surfaces should not exceed the temperature of the concrete being placed.

3.06 FINISHING OF FORMED SURFACES AND REPAIR OF SURFACE DEFECTS

A. General

1. Remove forms as soon as practicable. Refer to Section BC 1906.5 of the 2008 NYC Building Code.
2. Repair surface defects, including tie holes and cracks.
3. Remove oil, grease, compounds, and other contaminants from surfaces and areas to be repaired, those surfaces in contact with sprayed fireproofing, and those receiving coatings (ie. plaster, waterproofing, paint, and membranes of any kind).
4. Provide finishes specified below immediately after form removal.
5. Provide curing and protection.

B. Repair of Surface Defects

1. Remove all honeycombed and other defective concrete down to sound concrete. If chipping is necessary, the edges shall be perpendicular to the

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surface or slightly undercut. Undercut all cracks a minimum of 1" x 1". No feathered edges will be permitted. Dampen the area to be patched and an area at least 6" wide surrounding it to prevent absorption of water from the patching mortar. A bonding grout shall be prepared using a mix of approximately 1 part cement to 1 part fine sand passing a No. 30 mesh sieve, mixed to the consistency of thick cream, and then well brushed into the surface.

2. The patching mortar shall be made of the same materials and of approximately the same proportions as used for the concrete, except that the coarse aggregate shall be omitted and the mortar shall consist of not more than 1 part cement to 2¹/₂ parts sand by damp loose volume. Substitute white Portland cement for a part of the gray portland cement on exposed concrete in order to produce a color matching the color of the surrounding concrete, as determined by a trial patch. If the material color cannot be matched properly, the Contractor shall use a specialty repair mortar of the Commissioner's choice at the Engineer's discretion. The quantity of mixing water shall be no more than necessary for handling and placing. Mix the patching mortar in advance and allowed to stand with frequent manipulation with a trowel, without addition of water, until it has reached the stiffest consistency that will permit placing.
3. After surface water has evaporated from the area to be patched, brush the bond coat well into the surface. When the bond coat begins to lose the water sheen, apply the premixed patching mortar. The mortar shall be thoroughly consolidated into place and struck off so as to leave the patch slightly higher than the surrounding surface. To permit initial shrinkage, leave it undisturbed for at least 1 hr before final finishing. Keep the patched area damp for 7 days. Do not use metal tools for finishing a patch in a formed wall that will be exposed.

C. Finishing

1. Smooth Rubbed Finish
 - a. Provide for smooth form finish.
 - b. Produce on newly hardened concrete no later than the day following form removal.
 - c. Wet the surfaces and rub with a No. 16 carborundum brick or other equal abrasive to obtain a smooth, even surface of uniform

appearance without applying any cement or other coating.

- d. Obtain the final finish by thoroughly rubbing with a No. 30 carborundum brick. The surface shall be wet for a period of 3 days. The Commissioner shall be the sole judge of whether the finish is proper.

D. Acceptance of Concrete Finish

If the finish produced is not acceptable to the Commissioner, the Contractor shall be responsible for all costs incurred to produce an acceptable finish by whatever means determined by the Commissioner.

3.07 SLABS

A. Placement

1. Mixing and placing shall be carefully coordinated with finishing. Do not place concrete on the subgrade or forms more rapidly than it can be spread, straightedged, and darbied or bull floated. Provide leveling, floating, troweling, etc. at the correct time interval after pouring to prevent dusting and a non-durable surface as specified in ACI 302.1R. These operations must be performed before bleeding water has an opportunity to collect on the surface.
2. To obtain good surfaces and avoid cold joints, the size of finishing crews shall be planned with due regard for the effects of concrete temperature and atmospheric conditions on the rate of hardening of the concrete.
3. Provide extra concrete as required to make up for any deflections in the metal deck and steel beams in order to provide a level surface using a laser. The beam, girder, and deck deflections may total up to 1¹/₂".

B. Leveling and Finishing

1. General

- a. Carefully provide slab depressions as required for the finishes indicated on the Drawings.
- b. Unless otherwise indicated on the Drawings or specified herein, make all slabs even and uniform in appearance and, where no slope is required, level within plus or minus 3/16" in ten feet. All float-finished slabs shall achieve a tolerance of 5/16" in 10 feet and all trowel-finished surfaces shall achieve a tolerance of 3/16" in 10 feet. For small

areas such as stairs, and for areas that will be finished with wood flooring, such as gymnasiums, tolerance shall be 1/8" in ten feet. Tolerance is measured by placing a freestanding 10-foot straight edge anywhere on the slab and allowing it to rest upon two high spots within 72 hours after slab concrete placement. The gap between the straight edge and floor shall not exceed the above-specified tolerance.

- c. Where floor drains or floor slopes are indicated, slope slabs uniformly to provide even fall for drainage.
- d. Follow detailed recommendations for finishing given in ACI 301, Section 5, and ACI 302.1R.
- e. Protect finishes from contamination from time of placing until time of acceptance, placement of topping, etc.
- f. Remove defects of sufficient magnitude to show through floor coverings or that do not meet tolerances by grinding.

2. Finishes

- a. Surfaces intended to receive roofing, waterproofing membranes: Level and wood float surface. Leave surface free from depressions, bulges, rough spots, and other defects.
- b. Pavements: Finish surface to a true smooth plane and texture with a toothed roller or float with a wood float. Score concrete pavement in squares of approximately 5'-0" and/or as shown on Drawings. Each rectangular slab shall have all edges neatly rounded with proper tools and be bounded on all sides by a troweled border about 1" in width.
- c. Driveways: Level and float surface. Follow with a broom finish perpendicular to direction of traffic.

C. Slabs on Grade

1. General

- a. Aggregate base and crushed stone base material and preparation is part of Work of Section 310000 (Later).
- b. Where pavements to remain are damaged or destroyed as a result of the Work, patch,

- repair, or replace as required. Color to match existing.
- c. Subgrade and/or aggregate base/crushed stone base shall be free of frost before concrete placing begins.
2. Slabs where vapor barrier required
- a. Provide vapor barrier for all interior slabs on grade except for pipe and duct and crawl spaces.
 - b. Install vapor barrier in accordance with manufacturer's instructions and ASTM E1643. Just prior to concrete placement, check vapor barrier for punctures and repair as specified below.
 - 1) Unroll vapor barrier with the longest dimension parallel to the direction of pour.
 - 2) Lap barrier over footings and seal to foundation walls.
 - 3) Overlap joints 6" and seal with pressure sensitive tape.
 - 4) Seal all penetrations with pipe boots.
 - 5) No penetration of the barrier is allowed except for reinforcing steel and permanent utilities.
 - 6) Repair damaged areas by cutting patches of vapor barrier, overlapping damaged areas 6", and taping all four sides with pressure sensitive tape.
 - c. Pour slab to required thickness after installation of reinforcement.

3.08 MISCELLANEOUS CONCRETE WORK

- A. Provide motor, blower, and other mechanical bases. Coordinate with the work of Division 23 and 26. Provide concrete bases as shown on Drawings.

3.09 PATCHING AND BONDING TO EXISTING CONCRETE

- A. Provide bonding agent whenever new concrete is to be poured against existing concrete, whenever the time between concrete pours is longer than that allowed for proper bond, and wherever bonding agent is indicated on the Drawings to be applied.
- B. Remove loose concrete from surface to be bonded with new concrete and clean. Remove rust from reinforcement

and structural steel by power chipping and power driven brushes.

- C. Apply bonding agent in accordance with manufacturer's specifications. Pour concrete as soon as bonding agent has cured and within 20 hours after application. If the 20-hour period has elapsed, then the bonding agent must be reapplied.

3.10 CURING AND PROTECTION

A. General

1. Begin curing concrete immediately after placement and finishing. Protect all freshly deposited concrete from premature drying and excessively hot or cold temperatures and maintain it with minimal moisture loss at a relatively constant temperature for the period of time necessary for the hydration of the cement and proper hardening of the concrete. Detailed procedures are given in ACI 308 and Section BC 1905.11 of the 2008 NYC Building Code.
2. Cure floor surfaces in accordance with ACI 308.
3. Do not apply curing compounds to surfaces receiving waterproofing, adhesives, membranes or additional concrete unless approved by adhesive or material manufacturer or compound is removed in an approved manner. As an alternate, provide wet curing.

B. Procedure

1. Concrete surfaces not in contact with forms:
 - a. Ponding or continuous non-manual sprinkling.
 - b. Absorptive mat or fabric, sand, or other covering kept continuously wet.
 - c. Curing compounds conforming to ASTM C1315 or strippable curing compound conforming to ASTM C309.
2. Concrete surfaces in contact with forms:
 - a. Minimize moisture loss from forms exposed to heating by the sun by keeping forms wet until they are removed.
 - b. After form removal, cure with one of the methods listed in 1 above.
3. Continue curing until a total of 7 days has elapsed during which the temperature of the air in contact with concrete has remained above 50°F. Prevent rapid drying during and at the end of the curing period.

4. Remove all curing compounds with cleaners recommended by curing compound manufacturer.

C. Cold Weather Curing

Concrete must be protected from water loss. This shall be accomplished by the application as soon as possible without harm to the concrete surfaces of either (a) exhaust steam, or vapor-resistant paper or polyethylene film, or (b) curing compounds. In all other respects, curing shall conform to applicable provisions of this Section. Concrete temperature shall be maintained between 50°F and 70°F.

D. Hot Weather Curing

1. During the period June 1 to October 1 or when hot weather conditions require it, maintain continuous water curing for a minimum period of twenty-four hours. Provide for windbreaks, shading, and other necessary provisions.
2. After 24 hours, curing shall be by one of the methods specified under B above. In all other respects, curing shall conform to applicable provisions of this Specification. Upon termination of the specified moist curing, every effort should be made to reduce the rate of drying by avoiding air circulation.

- E. Protection from mechanical injury: Protect concrete from mechanical disturbances during curing period as described under "Protection and Cleaning".

3.11 FIELD QUALITY CONTROL

A. Tests

Tests to be performed by the Testing Laboratory during construction are as follows:

1. Compliance of materials to Specifications tested from production samples.
2. Determination of the slump of the concrete for each sample taken and whenever consistency of the concrete appears to vary using ASTM C143. The Special Inspector will reject any concrete that does not meet the slump requirements.
3. Determination of water content of freshly mixed normal weight concrete utilizing the procedure of AASHTO T318. Concrete that does not meet the maximum water to cement ratio or the proportions given in the approved design mix will be immediately rejected regardless of slump.

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4. Strength tests on the specimens in accordance with ASTM C39:
 - a. The frequency of conducting strength tests of concrete shall be in accordance with Section BC 1905.6.2 of the 2008 NYC Building Code, with additional cylinders taken for an additional strength test and one cylinder for a 7-day break. Strength tests shall be performed for each 50 cubic yards, or portions thereof, of concrete placed in any one day's concreting. Specimens will be stored at the site in the insulated curing box provided by the Contractor. Each group of specimens is considered one strength test. One cylinder will be broken at 7 days for information.
 - 1) Portland cement concrete: A strength test shall be performed at 28 days for acceptance. The remaining cylinders for the additional strength test will be tested only if the 28-day breaks are low or durability of the concrete is in question.
 - b. If one specimen in a test manifests evidence of improper sampling, molding, or testing, it shall be discarded and the average strength of the remaining cylinders shall be considered the test result. Should all specimens in a test show any of the above defects, the entire test shall be discarded.
5. Determination of air content and unit weight of normal weight concrete sample for each strength test in accordance with ASTM C173 or C231 and ASTM C138.
6. Determination of air content and unit weight of lightweight concrete sample for each strength test in accordance with ASTM C173 or C231 and ASTM C567.
7. Determination of temperature of concrete sample for each strength test.

B. Inspection

1. Refer to "Source Quality Control" for responsibility and procedure.
2. The Contractor shall cooperate in the making of all tests by the Laboratory Technician by:
 - a. Providing a well-constructed shanty, to be approved by the Commissioner. This shanty

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shall have an area of not less than 50 sq ft, be well lighted, and provided with a table for mixing concrete, shelves for storage of the Laboratory's equipment, molds, etc., one chair, hinged door with suitable lock.

- b. Providing an insulated curing box of sufficient size and strength to contain all specimens made in any four consecutive working days. The Contractor shall furnish an outlet to provide the necessary temperature in the storage box, pending delivery to the Laboratory of the test cylinders.
- c. Providing a buggy for transporting the concrete taken from the mixer (and/or point of placement) to the shanty for testing and the preparation of specimens.
- d. Protecting the property of the Laboratory to be stored in the shanty and keeping test specimens free from vibration and other disturbances.
- e. Providing a microwave of the size specified in AASHTO T318 and a portable generator.

C. Evaluation and Acceptance of Concrete

1. Strength tests on structural concrete will be evaluated according to Section BC 1905.6.3.3 of the 2008 NYC Building Code.
2. When the average strength of the test cylinders, as defined in Section BC 1905.6.3.3 falls consistently below the specified strength (f'c), the Commissioner shall have the right to order the Contractor to change the proportions or the water content of the concrete to secure the required strength for the remaining portion of the structure, all at the Contractor's expense. It is the Contractor's complete responsibility to modify the concrete mix design, material controls, and/or concrete operations where necessary to obtain the compressive strength required by the design and Specification.
3. When the average strength of test cylinders for any portion of the structure is less than that required by the design or Specification, or where there is other evidence that the quality of the concrete is below Specification requirements, the adequacy of the concrete will be checked according to the requirements of Section BC 1906.6 either by structural analysis or by core or load tests or by any combination of these procedures. The

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Commissioner will determine which procedures to use:

- a. Structural Analysis Computations (Section BC 1905.6.5.5), which will be performed by the Commissioner.
 - b. Core Tests (Section BC 1905.6.5.2) - Performed in accordance with ASTM C42.
 - c. Load Tests (AC1318 Paragraph 20.3 or Section BC 1713 of the Building Code).
4. Exterior concrete exposed to the elements with low strength test results or other evidence of poor durability will be rejected.
 5. Low Strength Tests of Concrete or evidence of poor durability - Results
 - a. Pay for additional costs of labor and materials required at the job for all damages resulting from load tests and the taking of cores. Remove and replace concrete work that is not of adequate strength or durability and cannot be made to work by remedial methods acceptable to the Commissioner at own cost. The Contractor shall be held responsible for all delays and damages to the work of other Divisions that occur as a result of non-conformance.

3.12 PROTECTION AND CLEANING

A. General

During the curing period, and thereafter as conditions may require, protect the concrete from damaging mechanical disturbances, particularly excessive load stresses, heavy shock, and excess vibration. Protect all finished concrete surfaces from damage caused by construction equipment, materials or methods, and by rain or running water. Self-supporting structures shall not be loaded in such a way as to overstress the concrete.

B. Floors

Floors that have received their final finish shall be closed to all traffic for at least 48 hours following the completion of troweling. Avoid damage to the floor and repair, clean, and prep floor for finishes.

3.13 ACCEPTANCE OF CONCRETE WORK

A. General

1. Completed concrete work that meets all applicable requirements will be accepted without qualification.
2. Completed concrete work which fails to meet one or more requirements but which has been repaired to bring it into compliance will be accepted without qualification.
3. Completed concrete work which fails to meet one or more requirements and which cannot be brought into compliance may be accepted or rejected as provided in these Specifications or in the Contract Documents. In this event, modifications may be required to assure that remaining work complies with the requirements.
4. Concrete work judged inadequate by structural analysis, core test, results of load test or deemed unacceptable due to appearance or durability concerns shall be repaired, reinforced with additional construction if so directed by the Commissioner, or be replaced if so directed by the Engineer at the Contractor's expense.
5. Pay all costs incurred by the Commissioner in providing additional testing and/or analysis required by this Section.
6. The Commissioner will pay all costs of additional testing and analysis made at its own request that is not required by this Section or that shows concrete is in compliance with the Contract Documents.

B. Appearance

1. Concrete exposed to view with defects that adversely affect the appearance of the specified finish may be repaired only by approved methods.
2. Concrete not exposed to view is not subject to rejection for defective appearance.

C. Strength of Structure

1. The strength of the structure in place will be considered potentially deficient if it fails to comply with any requirements that control the strength of the structure, including but not necessarily limited to the following conditions:
 - a. Low concrete strength as described under "Field Quality Control".

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- b. Reinforcing steel size, quantity, strength, position, or arrangement at variance with the requirements of the Contract Documents.
 - c. Concrete that differs from the required dimensions or location in such a manner as to reduce the strength.
 - d. Curing less than that specified.
 - e. Inadequate protection of concrete from extremes of temperature during early stages of hardening and strength development.
 - f. Mechanical injury as defined under "Protection and Cleaning", construction fires, accidents, or premature removal of formwork likely to result in deficient strength.
- 2. Structural analysis and/or additional testing may be required when the strength of the structure is considered potentially deficient.
 - 3. Core tests may be required when the strength of the concrete in place is considered potentially deficient.
 - 4. If core tests are inconclusive or impractical to obtain or if structural analysis does not confirm the safety of the structure, load tests may be required and their results evaluated in accordance with Chapter 20 of ACI 318.

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SECTION 042000
UNIT MASONRY

PART 1 GENERAL

1.01 SUBMITTALS

- A. Product Data:
1. Mortar:
 - a. Portland Cement: Brand and manufacturer's name.
 - b. Masonry Cement: Brand and manufacturer's name.
 - c. Lime: Brand and manufacturer's name.
 - d. Sand: Location of pit, name of owner, and previous test data.
 - e. Color Pigments: Brand and manufacturer's name.
 2. Masonry Wall Reinforcement: Catalog sheets and specifications.
- B. Samples:
1. Concrete Masonry Units: 6, each size.
 2. Masonry Wall Reinforcement: 24 inch long sections.
- C. Quality Control Submittals:
1. Test Reports:
 - a. Concrete Masonry Units: Submit certified test reports for each size showing that units for delivery to the Project meet the requirements of these Specifications.

1.02 PROJECT CONDITIONS

- A. Environmental Requirements:
1. Protect masonry and materials against freezing at temperatures below 40 degrees F.
 2. Do not use frozen materials or materials coated with ice or frost.
 3. Do not lower freezing point of mortar by use of antifreeze agents or other admixtures. Do not use calcium chloride in mortar.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

- A. Hollow Load-Bearing Units: ASTM C 90, Type I.

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- B. Fire Rated Units: Aggregate type and equivalent solid thickness as required to obtain the fire resistance rating indicated. Fire resistance ratings shall be based on fire tests in accordance with ASTM E 119.
- C. Aggregate:
 - 1. Lightweight Units: ASTM C 331; dry net weight not more than 105 lb per cu ft.
 - 2. Normal Weight Units: ASTM C 33; dry net weight not less than 125 lb per cu ft.
- D. Special Shapes: Units of shape and size required for lintels, corners, jambs, sash, control joints, headers, bonding, and other special conditions indicated.
 - 1. Outside Corners: Square edge units.
 - 1. Outside Corners: Bullnose units.

2.02 MORTAR AND MASONRY GROUT

- A. Mortar: ASTM C 270, proportion specifications. Types as follows:
 - 1. Type M for unit masonry below grade in contact with fill materials.
 - 2. Type S for concrete masonry units.
 - 3. Type N for brick masonry units.
 - a. Proportion Portland cement, lime, and sand in a 1:1:6 ratio.
- B. Color Pigments: High purity, finely ground, chemically inert, unfading, lime proof mineral oxides specially prepared for use in mortar.
 - 1. Proportion color pigments with other ingredients in mortar as necessary to match color of existing adjacent mortar joints.
- C. Grout: ASTM C 476, fine or coarse as most suitable for the particular job conditions.

2.03 ACCESSORIES

- A. Masonry Wall Reinforcement: Joint reinforcement factory fabricated from cold-drawn steel wire, truss or ladder design, 9 gage deformed steel wire longitudinal rods welded to 9 gage steel wire cross ties spaced 16 inches on center; width 1-1/2 to 2 inches less than wall thickness. Furnish factory-fabricated corner and tee sections for corners and wall intersections.
 - 1. Finish for Exterior Walls: 1.5 oz per sq ft hot dipped galvanized after fabrication.
 - 2. Finish for Interior Walls: 0.8 oz per sq ft mill galvanized.

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3. Cavity Wall Construction: Ladder design fabricated with drip notch in cross ties centered over the cavity.
 4. For walls with concrete masonry unit back-up wythe, reinforcement shall have a third longitudinal rod located for proper embedment at internal face shell of concrete masonry units.
 5. Provide units with adjustable 2-piece rectangular ties where horizontal joints of facing wythe do not align with those of back-up.
- B. Bar Reinforcement: ASTM A 615, Grade 60, deformed steel bars.
1. Rebar Positioner: Fabricate from galvanized steel wire, 9 gage or 6.5 gage as required. Design to fit concrete masonry units, and number, size and location of rebars indicated. Products; Steel-Wich Telescoping Rebar Positioner™, P. O. Box 1936, Buffalo, NY 14240, (716) 683-7526; or No. 376, 377 by Heckmann Accessories, 4015 West Carroll Avenue, Chicago, IL 60624, (800) 621-4140.
- C. Buck Anchors (For Anchoring New Masonry To Existing Construction): 1-1/4 x 1/8 x 8 inch long Z type steel buck anchor with 2 inch long right angle bent ends, bolt hole in one bent end, 1.5 oz per sq ft hot dipped galvanized after fabrication. Furnish 3/8 inch diameter galvanized machine bolt and nonferrous metal expansion shield.
- D. Continuous Steel Angle (For Anchoring New Masonry to Existing Masonry): Continuous galvanized steel angles of sizes indicated with holes spaced 18 inches on center. Furnish galvanized steel anchors of sizes and types indicated or required.
- E. Masonry Veneer Anchors: Corrugated wall ties, 22 gage steel, 7/8 inch wide, 7 inches long, 1.5 oz per sq ft hot dipped galvanized after fabrication.
- F. Flexible Anchors: 1.5 oz per sq ft hot dipped galvanized steel anchors which will permit horizontal and vertical movement of masonry but will maintain lateral restraint, and as follows:
1. For Anchorage To Concrete Framework: 2 piece anchors with 12 gage sheet steel dovetail section and rectangular or vee-shaped 3/16 inch diameter wire tie section sized to extend to within one inch of face of masonry.
 2. For Anchorage To Steel Framework: 2 piece anchors with crimped 1/4 inch diameter bar for welding to

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steel and rectangular or vee-shaped 3/16 inch diameter wire tie section sized to extend to within one inch of face of masonry.

- G. Dovetail Anchor Slot Concrete Inserts: 24 gage galvanized steel, with filler strip; slot sized to fit dovetail anchor.
- H. Unit-Type Concrete Inserts: Cast iron or malleable iron, or fabricated 12 gage steel with 1.5 oz per sq ft hot-dip zinc coating.
- I. Masonry Wall Ties: 3/16 inch diameter cold-drawn steel wire, with 1.5 oz per sq ft hot-dip zinc coating after fabrication; Z-shaped for solid unit masonry, rectangular shape for hollow unit masonry; 2 piece adjustable type where wythe courses are not aligned.
- J. Tiebars: 1-1/4 x 1/4 x 28 inch long steel bars with 3 inch long right angle bent ends, 1.5 oz per sq ft hot dipped galvanized after fabrication. Adjust length of bars as required when obstructions are encountered.
- K. Metal Lath: Galvanized, expanded metal lath weighing not less than 3.4 pounds per square yard.
- L. Hardware Cloth: 16 gage, 1/2 inch square mesh, galvanized steel wire mesh.
- M. Premolded Control Joint Strips: Solid rubber strips of profile indicated (to maintain lateral stability of wall); 60-80 Shore A durometer hardness.

2.04 SOURCE QUALITY CONTROL

- A. Tests:
 - 1. Test concrete masonry units in accordance with ASTM C 140 and ASTM C 426.
 - 2. Have tests performed by a qualified independent testing laboratory.

PART 3 EXECUTION

3.01 PREPARATION

- A. Lay out walls and partitions with one course of unit masonry, or other suitable means, to define the spaces, locations of doors and other openings, and to serve as a guide for other trades in the installation of conduits, pipes, etc.

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- B. Allow other trades sufficient opportunity to install built-in work before proceeding with the walls and partitions. Do not cover pipes, conduit, or ductwork in masonry until directed by the Commissioner.
- C. Wet brick that absorb 20 drops of water (placed in a one inch circle) in less than 90 seconds.
- D. Clean off supporting surface under first course of masonry just prior to laying the masonry units.
- E. Protection:
 - 1. Protect face materials against staining.
 - 2. Protect newly laid masonry from exposure to precipitation, excessive drying, freezing, soiling, backfill, and other harmful elements.
 - 3. Cover top of walls with non-staining waterproof covering when Work is not in progress. Place with minimum 2 foot overhang of protective covering on each side of wall and securely anchor.

3.02 INSTALLATION

- A. Install masonry units plumb and true to line with level courses accurately spaced.
 - 1. Install masonry units in running bond unless otherwise indicated.
 - 2. Take special care when laying masonry units to be left exposed, or upon which high-build glazed coating, paint, or thin set tile will be applied. Surface plane tolerance for such Work: 1/8 inch in 10 feet in all directions.
- B. Adjust units to final position while mortar is soft and plastic. Remove units disturbed after mortar has stiffened; clean units and joints of mortar and re-lay in fresh mortar.
- C. Lay only dry concrete masonry units.
- D. Where cutting of masonry units is necessary, cut with a power saw. Lay out Work to avoid use of less than half-size units.
- E. Lay hollow units with full mortar coverage on horizontal and vertical face shell surfaces. Bed webs in mortar in starting course on footings and foundation walls, in all courses of piers, columns and pilasters, where adjacent to cells or cavities to be reinforced or filled with concrete or mortar, and within 1'-6" of each side of openings.

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- F. Collar Joints: Except in cavity walls, fill vertical-longitudinal joint between wythes by slushing and rodding the joint full of mortar.

3.03 JOINTS

- A. Construct uniform mortar joints, 3/8 inch thick unless otherwise indicated.
- B. Strike joints flush in surfaces to be plastered, stuccoed, or covered with other masonry or other surface applied finish other than smear and high-build glazed coating.
- C. Cut joints flush and tool slightly concave on both sides of other walls and partitions, including inner wythe of exterior cavity walls.

3.04 HORIZONTAL JOINT REINFORCEMENT

- A. Reinforce horizontal joints with continuous masonry wall reinforcement spaced every 16 inches vertically except as follows:
1. Space 8 inches vertically in parapet walls.
 2. Also reinforce horizontal joints immediately above and below openings for a distance of 2'-0" beyond opening in both directions.
- B. Do not bridge control joints or expansion joints with reinforcement.
- C. Lap ends of adjoining strips of reinforcement 6 inches or more.
- D. Install factory fabricated corner and tee sections at corners and wall intersections respectively.

3.05 TYING ADJACENT WYTHES

- A. Tie adjacent wythes of masonry walls together with continuous masonry wall reinforcement spaced vertically not more than 16 inches on center. Install reinforcement as specified under HORIZONTAL JOINT REINFORCEMENT.
- A. Tie adjacent wythes of masonry walls together with masonry wall ties spaced 16 inches vertically and 24 inches horizontally.

3.06 BONDING WITH MASONRY

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- A. Lay masonry units in masonry bond for the following:
 - 1. External corners of partitions and walls.
 - 2. Pilasters, piers, and columns.
 - 3. Intersections of walls and partitions with a door opening within one foot of intersection. Fill cells between the intersection and the door frame with mortar to the full height of the door.

3.07 ANCHORING

- A. Anchor walls adjoining or intersecting structural framing, and dependent upon structural framing for lateral support, to structural members with flexible anchors secured to structural members.
 - 1. Space flexible anchors 16 inches on center, unless otherwise shown on the Drawings.

3.08 CONTROL AND EXPANSION JOINTS

- A. Install control and expansion joints at locations indicated. Keep joints free of mortar and debris.

3.09 BUILT-IN WORK

- A. Avoid cutting and patching.
- B. Build-in bolts, anchors, nailing blocks, inserts, frames, vents, flashings, conduit and other items as masonry work progresses.
- C. Fit masonry units closely around built-in items. Fill voids around built-in items with mortar for anchorage. Solidly fill space between masonry and metal frames with mortar.
- D. Unless otherwise shown on the Drawings, construct 1/4 inch to 3/8 inch wide open joint around outside perimeter of exterior door and window frames and other framed exterior wall openings to receive sealant. Rake joints and tool smooth to a uniform depth of 1/4 inch.
- E. Flashings: Clean contact surfaces and remove projections which might puncture the flashing. Place flashing on bed of mortar and cover with mortar. Seal joints with joint sealant.

3.10 LINTELS

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- A. Install lintels over openings in masonry. Center lintel over opening. Set in full bed of mortar under each end.

3.11 CLEANING

- A. Cut off mortar projections remaining from tooling joints and dry-brush masonry before the end of each day's work.
- B. Additional Cleaning for Brickwork:
 - 1. Clean with stiff brushes and water.
 - 2. If staining or soiling persists, reclean with stiff brushes and a solution of trisodium phosphate, detergent, and water (1/2 cup of trisodium phosphate and 1/2 cup of detergent to each gallon of water). Rinse with clean water.
 - 3. If the above methods are unsuccessful, as judged by the Commissioner, reclean with an approved (determined by a sample area test) liquid masonry cleaning agent in accordance with the manufacturer's instructions.

3.12 SCHEDULE FOR CONCRETE MASONRY UNITS

- A. Unless shown otherwise on the Drawings, use the various kinds of concrete masonry units specified at the locations indicated below:
 - 1. Hollow Load-Bearing Units (Normal Weight):
 - a. Use for exposed exterior Work.
 - b. Use for Work in which the same masonry units are exposed on both the interior and exterior.

END OF SECTION

SECTION 05 12 00
STRUCTURAL STEEL

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Furnish and erect all structural steel as shown on Drawings.
- B. Provide shop painting and galvanizing as specified.

1.02 RELATED SECTIONS

- A. Metal Deck.....Section 05 30 00
- B. Metal Fabrications.....Section 05 50 00

1.03 REFERENCES

References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

- A. American Society of Testing and Materials (ASTM) standards, latest editions.
- B. "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings" 9th edition, including supplements. (AISC 335).
- C. American Welding Society (AWS) standards for procedures and materials.
- D. "Code of Standard Practice for Steel Buildings and Bridges" (AISC 303)
- E. Steel Structures Painting Council (SSPC) standards.

1.04 DEFINITIONS

- A. Structural Steel

Structural Steel consists of the steel elements of the structural steel frame essential to support the design loads. These elements consist of material as shown on the structural steel plan and listed in Article 2.1 of the AISC "Code of Standard Practice for Steel Buildings and Bridges."

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1.05 SUBMITTALS

A. Shop Drawings

1. Failure to submit legible shop drawings will be cause for return without review.
2. Provide a set of shop drawings showing all connections, bolting, welding, and size of material. Shop drawing shall show intended method of reinforcing existing members and making connections to existing steel as developed by the detailer based on conditions and actual dimensions.
3. Do not order steel in advance of approval of shop drawings, except at own risk.
4. Shop drawings shall be prepared under supervision of and bear the seal of a Professional Engineer licensed in the State of New York. Connections not designed on the Drawings shall be done by the detailer's licensed Engineer. Do not submit unchecked shop drawings. After final approval of all shop drawings, submit a final set sealed and signed by the Professional Engineer.
5. Shop drawings will be checked for size of material and strength of connection by the Engineer of Record, which shall not render the Engineer of Record responsible for any errors in construction dimensions, etc. that have been made in preparation of shop drawings. The Contractor shall assume full responsibility for the correctness of dimensions and fit.
6. Calculations shall be submitted upon request.
7. After shop drawings are 100% complete and approved and all field changes have been made, submit a set of as-built drawings to the Commissioner.

B. Quality Control Submittals

1. Certificates and Affidavits
 - a. Furnish notarized Building Department affidavit from steel manufacturer (Form SS24) certifying materials conform to Specification requirements and material was erected as designed.
 - b. Furnish bolt manufacturer's test reports, covering physical and chemical tests, for each lot of high strength bolts submitted.
 - c. Furnish steel manufacturer's certificate certifying welders employed on the Work have met AWS qualifications within the previous twelve months, and for work performed in the

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field are NYC licensed welders as per §28-407.1 of the Administrative Code.

- d. Furnish complete listing of ASTM's of materials listed in Part 2 of this Section and certification that materials supplied meet those listed.
2. Contractor Qualifications
Provide proof of Fabricator and Erector qualifications specified under "Quality Assurance".

1.06 QUALITY ASSURANCE

A. Qualifications

1. Fabricator: Company specializing in the fabrication of steel products to be used in the Contract shall have a minimum of three years experience.
2. Erector: Company specializing in performing the Work of this Section shall have a minimum of three years experience and have done projects with similar quantity of material.

B. Regulatory Requirements

1. Building Code: Work of this Section shall conform to all requirements of the NYC Building Code and all applicable regulations of governmental authorities having jurisdiction, including safety, health, noise, and anti-pollution regulations. Where more severe requirements than those contained in the Building Code are given in this Section, the requirements of this Section shall govern.
2. New York City Board of Standards and Appeals (BSA): Rules for Arc and Gas Welding and Oxygen Cutting and Steel Covering the Specifications for Design, Fabrication, and Inspection of Arc and Gas Welded Steel Structures and Qualification of Welders and Supervisors.
3. Industry Standards: Standards specified in Article 1.03 apply to Work of this Section. Where more severe requirements than those contained in the Standards are given in this Section or the Building Code, requirements of this Section or the Building Code shall govern.
4. Recommendations or suggestions in the codes and references listed in this Article and under "References" shall be deemed to be mandatory unless they are in violation of the Building Code.

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C. **Certifications**

1. Structural steel shall conform to the material acceptance, certification, and inspection requirements of Section BC 1701 of the 2008 NYC Building Code.
2. Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure".

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to the site at such intervals as to insure uninterrupted progress of Work.
- B. Deliver anchor bolts and other anchorage devices, which are to be embedded in cast-in-place concrete or masonry, in ample time so as not to delay Work.
- C. Store materials to permit easy access for inspection and identification. Store material of the ground and protect from the weather and contamination.

1.08 FIELD MEASUREMENTS

- A. Take field measurements as required by Drawings. Where possible, take field measurements of existing conditions prior to fabrication. Verify that field measurements are the same as those shown on Drawings and shop drawings. Report all deviations to the Commissioner in writing.

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PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Fasteners

1. Hilti, Inc.
2. ITW Ramset/Redhead, Inc.
3. Simpson Strong-Tie Anchor System
4. Powers Fasteners

2.02 MATERIAL

A. Structural Steel Shapes, Shims, Plates, and Bars

Structural steel shall conform to the provisions of ASTM A36 or ASTM A992, and pipe steel to the provisions of ASTM A501 unless otherwise noted.

B. Bolts

1. Anchor Bolts: Shall conform to the provisions of ASTM F1554, Grade 36, unless different grade is specified elsewhere. Size and detailing indicated on Drawings.
2. High-Strength Bolts: Shall conform to the requirements of ASTM A325.
3. Provide types as indicated on Drawings. The anchor specified shall be considered the basis of design. As a minimum, all anchors exposed to weather or embedded in masonry are to be Type 316 stainless steel. Anchors shall ICC certified for cracked concrete as per BC 1913 of the 2008 NYC Building Code.

C. Hardware

1. Nuts for anchor bolts shall conform to the requirements of ASTM A563.
2. Nuts for high-strength bolts shall conform to the provisions of ASTM A194 or ASTM A563 as specified in ASTM A325.
3. Washers shall conform to the provisions of ASTM F436.

D. Filler Metal for Welding

1. Welding electrode shall conform to E70XX classification of AWS A5.1 for welding of new steel to new steel.
2. Welding electrode shall be compatible with existing steel where connections are made to steel of existing building. Electrode shall be E7018 unless determined otherwise. E7018 are low

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hydrogen electrodes that must be kept extremely dry.

E. Structural Steel Primer Paint

Provide type of primer indicated on steel under the following application conditions.

1. Interior application: Modified alkyd rust-inhibitive type containing no lead equal to Tnemec Co. No. 10-99 or Carboline Carbocoat 115-SG. Red oxide paint is not acceptable.
2. Primer for galvanized steel to be painted: Epoxy paint equal to Tnemec Co. Series FC27 Typoxy or Carboline Carboguard 888.
3. Steel embedded in exterior masonry wall and exterior application: High adhesion high-solids epoxy coating equal to Tnemec Co. Series 135 Chembuild or Carboline Carboguard 890. This paint shall also be used on the existing steel exposed by masonry removals and wherever else existing steel is to be painted. Top coats for exposed steel is to be the epoxy coat system given in Section 099000.

F. Galvanizing by the Hot-dip Method

1. Galvanize structural shapes in accordance with ASTM A123.
2. Galvanize hardware in accordance with ASTM A153.
3. Galvanizing repair paint for regalvanizing welds and damaged areas shall conform to ASTM A780 and comply with Military Specification MIL-P-21035, such as ZRC Cold Galvanizing Compound.

2.03 SHOP ASSEMBLY - FABRICATION

A. General

1. Do not fabricate until shop drawings have been reviewed.
2. Fabricate and assemble steel in shop to greatest extent possible. Fabricate items and assemblies in accordance with AISC Specifications and the shop drawings. Properly mark members for field assembly.

B. Shop Connections

1. Weld or high-strength bolt shop connections as indicated on Drawings.
2. High-strength bolt connections are friction (slip-critical) connections. Install high-strength bolts in accordance with "Specification for Structural Joints using ASTM A325 or A490 Bolts" (RCRBSJ).

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3. Welding: Comply with "Structural Welding Code" for procedures, appearance, and quality of welds and methods used in correcting welded work.
4. Holes for other Work
 - a. Provide holes and openings required for securing other Work to steel framing and for passage of other Work through framing members. Coordinate with Drawings of other Work.
 - b. Cut, drill, flame cut, or punch holes perpendicular to metal surfaces. Method of cutting must not produce a roughness of over 1000 microinches. Surfaces exceeding these limits must be repaired by machine grinding. Reinforce all openings with steel shapes as shown on shop drawings.

2.04 SHOP PAINTING

A. General

Apply one shop coat of primer paint on structural steel except as follows:

1. Steelwork or portions of such to receive sprayed fireproofing. Steel that is exposed to the cavity and within the block back-up is to be painted, unless indicated to be galvanized.
2. Top flanges of structural steel members requiring stud shear connectors or supporting metal deck.
3. Contact surfaces of structural steel that are to be bolted or welded together and surfaces within 2" of field welds.
4. Steel members, hardware, and miscellaneous pieces to be galvanized and not specified or indicated to be painted.

B. Cleaning and Surface Preparation

1. Clean all steel first in accordance with SSPC-SP1.
2. Clean steel work not to be painted (except steel work to be galvanized) in accordance with SSPC-SP2.
3. Clean new steel work to be painted within the same day as it will be applied and in accordance with SSPC-SP3 for interior steel and SSPC-SP6 for exterior steel.

C. Shop Coat

1. Apply structural steel primer paint for interior application at a rate to provide dry film thickness of 2.0 to 3.5 mils. Apply primer paint for embedded in exterior masonry wall and exterior

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application at a rate to provide dry film thickness of 7.0 to 9.0 mils. Provide full coverage of joints, corners, edges, and exposed surfaces. Apply to dry surfaces only, when surface temperatures are above dew-point, by brush, spray, or roller, thoroughly and evenly, in strict accord with manufacturer's instructions for every detail of handling.

2. Apply second coat of the approved primer, in a darker shade, to surfaces inaccessible to painting after assembly or erection.
3. Protect machined surfaces with an approved rust-inhibiting coating that is readily removable prior to erection.

2.05 GALVANIZING

A. General

Galvanize all steel exposed to the weather and other members designated on Drawings to receive it. Galvanize all lintels, attachment clips, and hardware.

B. Cleaning and Surface Preparation

1. Hardware (bolts, nuts, etc.): Clean and leave free of mill scale before galvanizing.
2. Clean all steel first in accordance with SSPC-SP1 if needed.
3. Steel members: Clean in accordance with SSPC-SP8 before hot-dip galvanizing.
4. Steel members: Clean in accordance with SSPC-SP10 before zinc metallizing. Surface shall have a 3-4 mil anchor pattern. Moisture cannot be present on steel and temperature cannot be less than 5°F above the dew point. Thermal spray must be applied within 4 hours of blasting.

C. Shop Coat - Hot-dip Galvanizing - Provide for items not to have finish paint coat.

1. Galvanize hardware in accordance with ASTM A153.
2. Galvanize steel shapes in accordance with ASTM A123. Apply zinc coating as per Thickness Grade specified in ASTM A123.

2.06 SOURCE QUALITY CONTROL

A. Testing

1. General

- a. Structural steel work is subject to all tests required by the Special Inspection requirements of the 2008 NYC Building Code.

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- b. Cooperate with the Testing Laboratory in making all required tests.
- 2. Tests: To be performed by the Testing Laboratory.
 - a. Shop bolted connections: Tested in accordance with AISC specifications.
 - b. Shop welding - The laboratory will perform the following functions:
 - 1) Certify welders.
 - 2) Visually inspect all welds, record type and locations of defects, and perform tests if necessary. Check all corrected work.
 - 3) Perform non-destructive tests if necessary or as required by the Special Inspector.

B. Inspection

- 1. Testing Laboratory
 - a. A Testing Laboratory or Special Inspection Agency will assist in the inspection of steel fabrication and conduct tests at the mill, shop, or foundry. The laboratory will assist in checking erection tolerances and provide shop and field testing required for all structural steel and metal deck work, including metal deck and studs.
 - b. The Testing Laboratory will be responsible to and under the supervision of a Special Inspector.
- 2. Special Inspector

The Commissioner will assign, under the requirements of Section BC 1704.3 of the 2008 NYC Building Code, a Special Inspector to supervise the Work listed above under "Testing Laboratory".
- 3. Notification: Notify the Commissioner before beginning fabrication of the structural steel and supply laboratory with copies of agreements, approved drawings, approved prints of all shop details, etc., and all necessary information relating thereto. Do not ship material to job site until after inspection and approval by the Testing Laboratory.
- 4. Discretionary Inspections: No mill, shop, foundry, or field inspection, such as is above provided for, shall be held to prohibit or preclude inspection of such materials during delivery and erection at the building by such other persons as the Commissioner shall direct.
- 5. Reports: Shop and field reports, including shipments, will be submitted by the Testing

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Laboratory to the Commissioner as the work proceeds at the shop or job site. A final report will be submitted by the Testing Laboratory when work is completed at the shop, and again when work is completed in the field. The Special Inspector reserves right to reject material not in compliance with specified requirements at any time.

6. Corrections: Correct deficiencies in work which inspections and tests have indicated to not be in compliance with requirements. Pay for additional tests, at own expense, necessary to reconfirm any non-compliance of original work and as necessary to show compliance of corrected work.
7. Contractor's Responsibility: Inspection and acceptance or failure to inspect shall in no way relieve the Contractor or the mill and shops from their responsibility to furnish satisfactory material strictly in accordance with Drawings and Specifications.

PART 3 - EXECUTION

3.01 FIELD PROBES AND VERIFICATION OF EXISTING STRUCTURAL MEMBERS

- A. Conduct a condition survey of the building structure as specified on construction drawings and as indicated herein.
- B. Applications
 1. Structures where there is doubt as to structural adequacy with regard to future loading when the original design criteria are not known.
- C. Categories of evaluation
 1. Stability of entire structure.
 2. Stability of individual components of the structure.
 3. Strength and safety of individual structural elements.
- D. Survey methods for evaluation
 1. Visual examination.
 2. In-place tests for assessing the thickness and strength of concrete.
- E. Supervision
 1. All survey work shall be done in strict supervision of the Commissioner.

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F. Report

1. All findings shall be reported to the Commissioner.

3.02 EXAMINATION

- A. Verify that field conditions are acceptable and that erection may proceed. Notify the Commissioner in writing of conditions that adversely affect the Work. Do not proceed with erection until conditions have been corrected. Beginning of installation means the erector accepts existing conditions.

3.03 ERECTION

A. General

1. Erection shall conform to Section BC 2205.6.4 of the 2008 NYC Building Code and Section 1.25 of AISC 335.
2. All work shall be erected plumb, square, and true to lines and levels in strict accordance with the structural requirements of the building.
3. Provide all machinery, apparatus, and staging required for the erection of steel work in a thoroughly safe and efficient manner. Install, maintain and remove, without injury to other Work, such temporary bracing, scaffolding, etc. as may be necessary or required. Care shall be taken that no part of the structure is overloaded during construction.
4. Arrange for deliveries of material to facilitate the rapid and continuous progress of operation, but the site or streets adjacent to same shall not be used for the storage of material unless absolutely necessary and then only with special permission of the Commissioner and other authorities having jurisdiction.
5. Employ a Licensed Professional Engineer to ensure accurate erection of the steel.
6. Do not alter or cut structural members without written approval of the Engineer of Record. Flame cutting in field of members to correct fabrication errors is to be avoided and to be done only upon approval of the Engineer of Record based on the method proposed. Roughness cannot exceed 1000 microinches. Repair of surfaces shall be by mechanical grinding.

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B. Temporary Shoring and Bracing

Provide temporary shoring and bracing members with connections of sufficient strength to bear erection loads and guy wires to maintain structure plumb and in true alignment until completion of erection. Remove temporary work when permanent members and bracing are in place and final connections are made. Fill erection bolt-holes on exposed to view members with plug welds and grind smooth.

C. Anchor Bolts

1. Furnish to the concrete masons anchor bolts and other connectors required for securing structural steel to cast-in-place concrete work, together with instructions, templates, etc. necessary for setting them. Anchor bolts are to be surveyed and any approved modifications made prior to placement of columns.
2. For expansion/adhesive anchors used as anchor bolts, drill holes of depth and size required by the manufacturer for the required loading. Have bolt manufacturer perform pullout test to verify capacity prior to final approval.
3. Tighten anchor bolts after support members have been positioned and plumbed. Cut off protruding edges of wedges or shims flush with edge of base or bearing plate prior to packing with grout. Tighten expansion bolts/anchors to torque required by manufacturer.

D. Base Plates

1. Clean concrete and masonry bearing surfaces of loose and bond-reducing materials.
2. Set loose and attached base plates and bearing plates for structural members on shims and other adjusting devices. Plates are to have grout holes, such as leveling plates, within specified tolerances. Elevations of shims and leveling plates shall be surveyed and adjusted to correct elevation prior to placement of column or beam. Plates are to have grout holes.

E. Field Assembly

1. Erect structural frames accurately to lines and elevations indicated. Align and adjust members forming a part of a complete frame or structure before permanently fastening.
2. Clean bearing surfaces and other surfaces that will be in permanent contact before assembly.
3. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

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4. Level and plumb individual members of structure within specified AISC tolerances.
5. Establish required leveling and plumbing measurements on mean operating temperature of structure. Make allowances for difference between temperature at time of erection and mean temperature at which structure will be when completed and in service.
6. Splice members only where indicated and accepted on shop drawings.

F. Connections

1. Field connections between new steel members will typically be bolted unless otherwise indicated on Drawings. Connections made to existing steel shall be welded utilizing E7018 electrode. Follow preheat and interpass temperature requirements given in AWS.
 - a. Provide high-strength bolts for bolted connections except where indicated on the Drawings. High-strength bolt connections are friction (slip-critical) connections. Install high-strength bolts in accordance with "Specification for Structural Joints using ASTM A325 or A490 Bolts."
 - b. For ASTM A307 or A325 bolts, hardened washer shall be installed under the turned element. For ASTM A490 bolts, hardened washer shall be installed under the head and nut.
 - c. Where connections are to be made to the vertical face of existing concrete, drill holes to the proper diameter and depth required for installation of expansion/adhesive anchors and install the anchors as per manufacturer's instructions. Tighten to the torque values specified by the manufacturer. Attach plates flush with concrete surfaces after the surfaces have been cleaned. Have bolt manufacturer perform pullout test to verify capacity and quality of substrate prior to final approval.
2. Holes
 - a. The size of bolt holes shall be in accordance with AISC "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings."
 - b. Ream or broach holes that must be enlarged to admit bolts. Burning or use of drift pins is not permitted.

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G. Field Touch-Up

1. Painted Members: After erection, clean all damaged areas in shop coat, exposed surfaces of bolts, bolt heads, nuts and washers, abrasions, and all field welds and unpainted areas adjacent to field welds to the same standards as the shop coat and paint with same paint to same thickness as the shop coat. These areas shall be thoroughly cleaned of rust and other bond inhibiting materials before applying the touch-up paint. Paint all existing steel using the high-solids epoxy specified in Part 2. Finish painting is specified in Section 099101. Provide epoxy coat system for all exterior painting.
2. Galvanized Members: After erection, clean and paint all damaged areas to the galvanizing, welds, and areas adjacent to welds with the galvanizing repair paint. For galvanized members to be painted, finish painting is specified in Section 099101 and shall be the final two coats of the epoxy paint system.

3.04 TOLERANCES

- A. Erection tolerances shall be in accordance with "Code of Standard Practice for Steel Buildings and Bridges".

3.05 FIELD QUALITY CONTROL

- A. Cooperate with the Special Inspector and the Testing Laboratory performing Special Inspection testing.
- B. The Special Inspector will review erection of structural framework and test field bolting and welding as listed in Part 2 of this Section.
- C. The Contractor shall engage an engineer licensed in the state of New York to check tolerances and inspect the erection.

3.06 CLEANING

- A. Structural steel or portions of such to receive sprayed fireproofing shall be clean of dust, grease, oils, loose material, and any other matter which would impair the adhesion of the fireproofing material to the steel.

END OF SECTION

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SECTION 053100
FLUTED STEEL DECKS

PART 1 GENERAL

1.01 REFERENCES

- A. Comply with the following reference standards unless otherwise shown or specified:
1. Design: "Specification for the Design of Cold-Formed Steel Structural Members" by the American Iron and Steel Institute (AISI Specification).
 2. Welding: "Structural Welding Code - Sheet Steel, AWS D 1.3", by the American Welding Society (AWS Code).

1.02 SUBMITTALS

- A. Shop Drawings: Show application to project. Prepare separate drawings, coordinated with, but not superimposed on, joist drawings or structural steel erection drawings.
- B. Product Data: Manufacturer's printed specifications and installation instructions.

1.03 HANDLING AND STORAGE

- A. Handle and stack materials carefully in order to prevent deformation or damage. During unloading and hoisting, take extra care to prevent damage to ends and sides of individual metal deck panels. Do not place panels in direct contact with the ground. Protect panels from the elements and keep panels dry.
1. If mud, dirt, or other foreign matter is accumulated on panels, remove such accumulation completely prior to installation.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Fluted Deck and Metal Accessories: Sheet steel conforming to ASTM A 611 Grade C or ASTM A 653 SQ Grade 33. Before fabrication, sheet steel shall receive ASTM A 525, Class G 90, hot dip zinc coating; or, except

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where specified or shown to be galvanized, shall receive chemical cleaning, phosphate treatment, and baked on primer. Finish shall be evenly coated with no cracking after fabrication. Accessories shall be fabricated of not lighter than 18 US Standard Gage sheet steel.

- B. Self-Drilling Fasteners: No. 12-14 x 3/4 inch, hex washer head, self-drilling fastener with pilot point.
- C. Flexible Closure Strips: Manufacturer's standard vulcanized, closed-cell, synthetic rubber closure strips.

2.02 FABRICATION

- A. Steel deck shall be formed with maximum distance of 2-5/8 inches between flutes at upper faces and a minimum distance of 2 inches at lower flute faces. Furnish units in lengths to be continuous over 3 spans wherever possible.
- B. Steel deck shall conform to the following properties:
 - 1. Unit depth: 1 1/2"
 - 2. Minimum moment of inertia: 0.201 in⁴/ft
 - 3. Minimum US Standard Gage: 20
- C. Unless otherwise indicated or approved, fabricate deck for predetermined openings, and reinforce where required to maintain deck strength, alignment, and profile.
 - 1. Small openings, as recommended by the deck manufacturer, may be field cut.
- D. Accessories: Shop fabricated accessories, compatible with steel deck, as required to complete the Work, including, but not limited to, the following:
 - 1. Sheet metal cants beneath flashings when required for roofing over steel deck.
 - 2. Closures to close deck at ridges, valleys, and hips on roof deck slopes exceeding 1/2 inch per foot.
 - 3. Pour stops and girder fillers for concrete fill.
 - 4. Column closures, end closures, Z closures, and cover plates.
- E. Progress shop fabrication from "APPROVED" or "APPROVED AS NOTED" detail drawings only.

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1. When detail drawings are "APPROVED AS NOTED", progress fabrication in strict accordance with notes thereon.
2. Fabrication progressed from "DISAPPROVED" or "RETURNED FOR CORRECTION" detail drawings will be rejected. The contractor shall have no claim against the State for any costs or delays due to rejection of items fabricated from "DISAPPROVED" or "RETURNED FOR CORRECTION" detail drawings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine supporting framing and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance of steel deck.
- B. Do not start installation of metal deck until corresponding steel framework has been plumbed, aligned and completed and until temporary shoring, where required, has been installed. Coordinate installation sequence of metal deck with concrete encasement of steel beams.
- C. Steel surfaces to which materials, provided under this Section, are to be welded, shall be free of paint, ice, water, oil, dirt, rust and other materials detrimental to welding.
- D. Locate decking bundles to prevent overloading of supporting members

3.02 INSTALLATION

- A. Install the Work of this Section in accordance with the manufacturer's printed instructions except where shown or specified otherwise.
 1. Welding shall comply with the AWS Code.
 2. Perform welding free of sharp points.
- B. Place deck units on supporting steel framework and adjust to final position with ends bearing on supporting members and flutes in straight and true alignment through entire length of run before being permanently fastened. Do not stretch or contract side lap interlocks. Install temporary shoring before

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placing single span deck panels when required to meet manufacturer's recommendations.

- C. End Bearing: Install deck units over supporting framing with a minimum end bearing of 1-1/2 inches, with end joints as follows:
 - 1. Non-Composite Deck End Joints: Lapped 2 inches minimum.

- D. Deck Fastening: Fasten deck units at ends and intermediate supports with arc spot welds (puddle welds) not less than 3/4 inch diameter, at 12 inches on centers, along the supporting members, unless more stringent requirements are indicated on the drawings or required by the fire resistance ratings indicated on the drawings. Weld the first and last deck flutes. Use welding washers for all deck lighter than 20 gage. Deck units may be fastened to steel supports 0.18 inches or less in thickness (cold-formed metal framing) with No.12-14 x 3/4 inch self-drilling fasteners at 12 inches on center at ends and intermediate supports.

- E. Side lap fastening: Fasten side laps at intervals not exceeding 36 inches, using one of the following methods, unless more stringent requirements are indicated on the drawings or required by the fire resistance ratings indicated on the drawings:
 - 1. Mechanically fasten with self-drilling No.12 diameter or larger carbon steel screws.
 - 2. Mechanically button punch.

- F. Perimeter Edge Fastening: Weld starting and finishing side edges in bearing to supporting members at 36 inches on centers maximum, unless more stringent requirements are indicated on the drawings or required by the fire resistance ratings indicated on the drawings.

- G. Neatly field cut required openings, other than shop fabricated openings, after installation in accordance with the manufacturer's recommendations.

- H. Closures: Install flexible closure strips to effectively seal underside of flutes where fluted decks extend over exterior walls and also above interior partitions where there are no ceilings below the fluted deck.

END OF SECTION

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SECTION 055000
METAL FABRICATIONS

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Structural Steel (including framing for floor grating):
Section 051200.
- B. Field Painting: Section 099000.

1.02 REFERENCES

- A. Except as shown or specified otherwise, the Work of this Section shall meet the requirements of the following:
 - 1. Design, Fabrication, and Erection: "Specification for Structural Steel Buildings, Allowable Stress Design and Plastic Design" adopted by the American Institute of Steel Construction, June 1, 1989 (AISC Specification).
 - a. Design and Fabrication of Cold-Formed Shapes: "Specification for the Design of Cold-Formed Steel Structural Members", by the American Iron and Steel Institute (AISI Specification).
 - 2. Welding: "Structural Welding Code - Steel, AWS D1.1", or "Structural Welding Code - Sheet Steel, AWS D1.3", by the American Welding Society (AWS Codes).
- B. Organizations:
 - 1. AISC: American Institute of Steel Construction, One East Wacker Dr., Suite 700, Chicago, IL 60601-1802, 866-275-2472, www.aisc.org.
 - 2. AISI: American Iron and Steel Institute, 1140 Connecticut Ave., NW, Suite 705, Washington, D.C. 20036, (202) 452-7100, www.steel.org.
 - 3. AWS: American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126, (800) 443-9353, www.aws.org.
 - 4. ANSI: American National Standards Institute, 1819 L Street, NW, 6th Floor, Washington, DC 20036, (202) 293-8020, www.ansi.org.
 - 5. ASME: ASME International, 3 Park Ave., New York, NY 10016-5990, (800) 843-2763, www.asme.org.

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6. ASTM: ASTM International, 100 Barr Harbor Dr., PO Box C700, West Conshohocken, PA, 19428-2959, (610) 832-9500, www.astm.org.
7. MPI: The Master Painters Institute Inc., 2808 Ingleton Ave., Burnaby, BC, V5C 6G7, (888) 674-8937, www.specifypaint.com.
8. SSPC: The Society for Protective Coatings, 40 24th Street, 6th Floor, Pittsburgh PA 15222-4656, (877) 281-7772, www.sspc.org.

1.03 SUBMITTALS

- A. Shop Drawings: Show application to project. Machine duplicated copies of Contract Drawings will not be accepted.
 1. Locate anchor bolts required for installation in other Work; furnish setting drawings and templates for required anchors.
 2. Indicate shop and field welds by standard AWS welding symbols in accordance with AWS A2.4.
 3. Floor Grating: Submit erection plan; include cutout areas and clearances.
- B. Product Data: Catalog sheets, specifications, and installation instructions for each fabricated item specified, except submit data for fasteners only when indicated.

1.04 QUALITY ASSURANCE

- A. Galvanizing: Stamp galvanized items with galvanizer's name, weight of coating, and applicable ASTM number.

1.05 DELIVERY AND STORAGE

- A. Coordinate delivery of anchor bolts and other anchorage devices to be built into other construction to avoid delay.
- B. Promptly cover and protect steel items delivered to the site.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Steel Shapes, Plates, and Bars: ASTM A 36.

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- B. Steel Plates to be Bent or Cold-Formed: ASTM A 283, Grade C.
- C. Steel Pipe: ASTM A 53, type as selected, Grade A; black finish unless galvanizing is required; standard weight (Schedule 40), unless otherwise shown or specified.
- D. Anchors: Except where shown or specified, select anchors of type, size, style, grade, and class required for secure installation of metal fabrications. For exterior use and where built into exterior walls, anchors shall be galvanized or of corrosive-resistant materials.
 - 1. Threaded-Type Concrete Inserts: Galvanized ferrous casting, internally threaded to receive 3/4 inch diameter machine bolt; either malleable iron or cast steel.
 - 2. Wedge-Type Concrete Inserts: Galvanized box-type ferrous casting, designed to accept 3/4 inch diameter bolt having special wedge-shaped head; either malleable iron or cast steel.
 - a. Bolts: Carbon steel bolts having special wedge-shaped heads, nuts, washers and shims.
 - 3. Slotted-Type Concrete Inserts: Galvanized 1/8 inch thick pressed steel plate complying with ASTM A 283; box-type welded construction with slot designed to receive 3/4 inch diameter square head bolt and with knockout cover.
 - 4. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and equal to four times the load imposed when installed in concrete, as determined by testing per ASTM E 488, conducted by a qualified independent test agency.
 - a. Carbon Steel: Zinc-Plated; ASTM B 633, Class Fe/Zn 5.
 - b. Stainless Steel: Bolts, Alloy Group 1 or 2; ASTM F593, Nuts; ASTM F 594.
- E. Fasteners: Except where shown or specified, select fasteners of type, size, style, grade, and class required for secure installation of metal fabrications. For exterior use and where built into exterior walls, fasteners shall be galvanized.
 - 1. Standard Bolts and Nuts: ASTM A 307, Grade A, regular hexagon head.

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2. Stainless Steel Fasteners: ASTM A 666; Type 302/304 for interior Work; Type 316 for exterior Work; Phillips flathead (countersunk) screws and bolts for exposed Work unless otherwise specified.
 3. Eyebolts: ASTM A 489.
 4. Machine Bolts: ASME B18.5 or ASME B18.9, Type, Class, and Form as required.
 5. Machine Screws: ASME B18.6.3.
 6. Lag Screws: ASME B18.2.1.
 7. Wood Screws: Flat head; ASME B18.6.1.
 8. Plain Washers: Round, ASME B18.22.1.
 9. Lock Washers: Helical, spring type, ASME B18.21.1.
 10. Toggle Bolts: Spring Wing Type; Wing AISI 1010, Trunion Nut AISI 1010 or Zamac Alloy, Bolt Carbon Steel ANSI B18.6.3.
- G. Shop Paint (General): Universal shop primer; fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
- H. Shop Paint for Galvanized Steel: Epoxy zinc-rich primer; complying with MPI#20 and compatible with topcoat.
- I. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- J. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.02 FIXED LADDERS

- A. Fabricate ladders to span between elevations at locations indicated. Comply with the requirements of ANSI A 14.3 unless otherwise shown or specified.
- B. Side Rails: Continuous, structural steel, flat solid bars with eased edges, spaced 18 inches apart.
1. Rail Size: 1/2 x 2-1/2 inches.
 2. Rail Size: 3/8 x 2-1/2 inches.
- C. Rungs: Structural steel, round solid bars, spaced 12 inches oc.
1. Rung Size: 1 inch diameter.
 2. Rung Size: 3/4 inch diameter.

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PHASE II BUILDING RENOVATIONS**

3. Non-slip Surface: The top of each rung shall have a non-slip surface, achieved either by coating the rung with aluminum oxide grit set in epoxy resin adhesive or by use of manufactured rung filled with aluminum oxide grout.
- D. Fit rungs into punched holes in centerline of side rails, plug weld and grind welds smooth on outer face of rails.
- E. Supports: Locate supports for each side rail near top rung, at bottom of ladder, and at intermediate points spaced not more than 5'-0" oc. Use welded or bolted steel brackets or straps for wall anchors, designed for adequate support and anchorage to hold the ladder 6 inches clear of the wall surface and other obstructing construction.
- F. Except for ladders terminating at a hatch, extend side rails 3'-6" minimum above top rung and return rails to wall or structure; if construction does not extend above the top rung, goose-neck the extended rails back to the structure. Flare out side rails for through ladder extensions. For side-step ladders, continue the rungs also in the extension.
- G. Galvanize exterior ladders and supports.
- H. Safety Chain: ASTM A 666; Type 316 stainless steel, straight link individually welded, 3/8 inch trade size.
 1. Eye Bolts: Drop forged stainless steel, shoulder pattern, threaded, 1/4 inch diameter.
 2. Snap Eye Bolts: Chrome plated, 5/8 inch swivel loop, 3/8 inch snap opening.

2.03 STEEL PIPE RAILINGS AND HANDRAILS

- A. Fabricate railings and handrails of 1-1/2 inch (nominal) diameter steel pipe, unless otherwise shown.
- B. Railings: Unless otherwise shown, railings shall consist of top rail and intermediate rails, with posts spaced not more than 4 feet oc. Close ends of rails which do not terminate with a flange or continuous return.
 1. Space rails so that a sphere 4 inches in diameter cannot pass through the openings between the rails.
 2. Join posts, rails, and corners by one of the following methods:

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- a. Flush-type steel railing fittings, welded and ground smooth, with railing splice locks secured with 3/8 inch hexagonal-recessed-head setscrews.
 - b. Coped and welded joints made by fitting post to top rail and intermediate rail to post, mitering corners, groove welding joints, and grinding joints smooth. Butt railing splices and reinforce by a tight-fitting interior pipe sleeve not less than 6 inches long secured in place.
 3. Railings may be bent at corners instead of joining, provided the bends are uniformly formed in jigs, with cylindrical cross-section of pipe maintained throughout the entire bend.
 4. Unless otherwise shown, fabricate railings and accessories as necessary to secure posts and rail ends to construction as follows:
 - a. Anchor posts in concrete by means of post sleeves preset into the concrete.
 - b. Anchor posts to steel with steel flanges, angle type or floor type as required by conditions, welded to posts and bolted to the steel supporting members.
 - c. Anchor rail ends into concrete and solid masonry with round steel flanges welded to rail ends and anchored into the wall construction with expansion anchors.
 - d. Anchor rail ends to steel with oval or round steel flanges welded to rail ends and bolted or welded to the steel supporting members.
 5. Post Sleeves: Galvanized steel pipe not less than 6 inches long, and having an inside diameter not less than 1/2 inch greater than the outside diameter of the pipe post. Sleeve shall have a plate closure, sized to extend not less than 1 inch beyond the outside diameter of the sleeve, secured to the bottom of the sleeve.
 - a. Cover Flange: Round steel flange, sized to closely fit post and cover the sleeve.
 6. Fabricate removable railing sections as indicated on the Drawings.
- C. Handrails: Pipe handrails shall be secured to walls by means of wall brackets, and shall have a wall return fitting at each end of handrails unless otherwise shown.
1. Wall Brackets: Malleable iron castings, with 3 inches projection from the finish wall surface to the center of the handrail, and with the wall

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plate portion of the bracket drilled to receive one 3/8 inch diameter bolt. Brackets shall be located approximately 6 inches from each end of handrails and intermediate brackets equally spaced at intervals not exceeding 5 feet oc. Fabricate wall brackets to secure to wall construction as follows:

- a. Anchor into concrete and solid masonry with expansion anchors.
 - b. Anchor into hollow masonry and stud partitions with toggle bolts having square heads.
2. Wall Return Fittings: Cast iron castings, flush-type, with the same projection as specified for wall brackets.
- D. Galvanize all exterior railings and handrails, and interior railings and handrails where indicated on the Drawings, including pipe, flanges, fittings, brackets, fasteners, and other ferrous metal components.

2.04 SAFETY NOSINGS

- A. Nosings: Cast, abrasive non-slip type, of profiles indicated, extending full length of concrete treads or other concrete edges to be protected unless otherwise indicated. Equip each nosing with integrally cast, welded, or riveted anchors located not more than 4 inches from each end of nosing and intermediate anchors spaced not over 15 inches oc. Abrasive grain shall be integrally cast into the wearing surface.
1. Metal:
 2. Tread Nosing Units: 4 inches wide x 5/16 inch thick, with 1 inch minimum deep protective front lip.
 3. Curb Bar Nosing Units: 2-1/2 x 2-1/2 x 1/2 inch thick.
 4. Curb Bar Nosing Units: 1-1/2 x 1-1/2 x 3/8 inch thick.
 5. Surface Design: Cross-hatched abrasive.
 6. Surface Design: Fluted abrasive.
 7. Surface Design: Plain abrasive.

2.05 FLOOR GRATING

- A. Grating: Rectangular, welded steel bar grating designed to support 200 lb/sq ft with deflection not exceeding 1/180. Fabricate with bearing bars on edge, and with all intersecting and abutting members joined

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by the electro-pressure welding method for the full depth of cross bar. Steel Bars: ASTM A 569.

1. Top Surface of Bearing Bars: Plain.
2. Top Surface of Bearing Bars: Serrated.
3. Finish: One coat of grating manufacturer's standard shop paint.
4. Finish: Galvanized.
5. Fasteners for Removable Panels: Saddle clip anchor assembly, with self-drilling screw or weldable stud bolt. Clips shall have same finish as grating.
6. Banding: Continuous steel bar of same material and size as bearing bars, welded to grating panel.
7. Close Outs at Steps and Stairs: Special grating panel with nosing edge for platform ending at top of stairs.

2.06 FABRICATION

- A. Use materials of the sizes and thicknesses indicated on the Drawings. If not indicated, use material of required size and thickness to produce adequate strength and durability for the intended use of the finished product.
- B. Fabricate items to be exposed to view of material entirely free of surface blemish, including pitting, roller and seam marks, rolled trade names, and roughness. Remove surface blemishes by grinding or by welding and grinding prior to cleaning, treating, and finishing.
- C. Form metal true to line, with accurate angles, surfaces, and straight edges. Ease exposed edges to a radius of approximately 1/32 inch unless otherwise shown. Form bent-metal corners to the smallest radius possible without causing grain separation or otherwise impairing the metal.
- D. Weld corners and seams continuously. Grind exposed welds smooth and flush, to match and blend with adjoining surfaces.
- E. Form exposed connections with flush, smooth, hairline joints. Use concealed fasteners wherever possible. Use Phillips flathead (countersunk) screws or bolts for exposed fasteners, unless otherwise shown or specified.
- F. Prepare fabricated items for anchorage of the type indicated, coordinated with the supporting structure.

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Fabricate and space anchoring devices as indicated or, if not indicated, as required to produce adequate support for the intended use of the item.

- G. Punch, reinforce, drill, and tap fabricated items as required to receive hardware and other appurtenant items.
- H. Galvanizing:
 - 1. In addition to specific items specified or noted to be galvanized, galvanize items attached to, embedded in, or supporting exterior masonry (including interior wythe of exterior masonry walls) and concrete Work.
 - 2. Unless otherwise specified or noted, items indicated to be galvanized shall receive a zinc coating by the hot-dip process, after fabrication, complying with the following:
 - a. ASTM A 123 for plain and fabricated material, and assembled products.
 - b. ASTM A 153 for iron and steel hardware.
- I. Shop Painting:
 - 1. Cleaning Steel: Thoroughly clean all steel surfaces. Remove oil, grease, and similar contaminants in accordance with SSPC SP-1 "Solvent Cleaning". Remove loose mill scale, loose rust, weld slag and spatter, and other detrimental material in accordance with SSPC SP-2 "Hand Tool Cleaning", SSPC SP-3 "Power Tool Cleaning", or SSPC SP-7 "Brush-Off Blast Cleaning".
 - 2. Galvanized Items:
 - a. Galvanized items which are to be finish painted under Section 099000 shall be rinsed in hot alkali or in an acid solution and then in clear water.
 - b. Welded and abraded areas of galvanized surfaces shall be wire brushed and repaired with a coating of cold galvanizing compound.
 - 3. Apply one coat of shop paint to all steel surfaces except as follows:
 - a. Do not shop paint steel surfaces to be field welded and steel to be encased in cast-in-place concrete.
 - b. Apply 2 coats of shop paint, before assembly, to steel surfaces inaccessible after assembly or erection, except surfaces in contact.
 - c. Do not paint galvanized items which are not to be finish painted under Section 099000.

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4. Apply paint and compound on dry surfaces in accordance with the manufacturer's printed instructions, and to the following minimum thickness per coat:
 - a. Shop Paint (General): 4.0 mils wet film.
 - b. Shop Paint for Galvanized Steel: 3.0 mils wet film.
 - c. Galvanizing Repair Paint: 2.0 mils dry film.

PART 3 EXECUTION

3.01 PREPARATION

- A. Temporarily brace and secure items which are to be built into concrete, masonry, or similar construction.
- B. Isolate non-ferrous metal surfaces to be permanently fastened in contact with ferrous metal surfaces, concrete, or masonry by coating non-ferrous metal surface with bituminous mastic, prior to installation.

3.02 INSTALLATION

- A. Fit and set fabricated metal items accurately in designed locations, at proper elevation and alignment.
- B. Use anchorage devices and fasteners of required type, size, and number as required to provide a secure, rigid installation.
- C. Fit exposed connections accurately to form tight hairline joints. Weld connections which are not intended to be left as exposed joints, but cannot be shop welded because of size limitations. Grind welded joints smooth. Cut off exposed threaded portion of bolts flush with nut.
- D. Attached Work: Drill holes for fasteners with power tools to exact size required. Unless otherwise shown on the Drawings, fasten metal Work to concrete and solid masonry anchorage with expansion anchors. Fasten metal Work to hollow masonry and stud partitions with square head toggle bolts.
- E. Field Welding: Comply with AWS Codes for the procedures for shielded metal arc welding, for the appearance and quality of welds, and for the methods used in correcting welding Work.

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- F. Railings: Adjust railings prior to securing in place to insure alignment and proper matching at joints. Plumb posts in each direction. Secure posts and rail ends to construction as follows:
1. Anchor posts in concrete with post sleeves preset into the concrete. After the posts have been inserted into the sleeves, fill the annular space between post and sleeve solid with molten lead or an exterior quick-setting hydraulic cement. Cover anchorage joint with a cover flange.
 2. Anchor posts to steel with steel flanges, angle type or floor type as required. Weld flanges to posts, and bolt to the steel supporting members.
 3. Anchor rail ends to concrete and masonry with round steel flanges. Weld flanges to rail ends, and anchor into the wall construction with expansion anchors.
 4. Anchor rail ends to steel with steel oval or round flanges. Weld flanges to rail ends, and weld or bolt to the steel supporting members.
- G. Grating: Weld grating to supporting members, unless otherwise shown or specified.
1. Secure removable panels with saddle clip anchor assemblies.

END OF SECTION

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PHASE II BUILDING RENOVATIONS

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SECTION 061053
WOOD NAILERS AND BLOCKING

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Built-Up Bituminous Roofing System: Section 075100.

1.02 QUALITY ASSURANCE

- A. Mill and Producer's Stamp: Each piece of lumber shall bear a stamp indicating type, grade, mill, and grading agency.
1. Pressure treated wood shall bear a stamp or tag indicating the name of the treating company, year treated, preservative used, the level of treatment, intended use (appropriate AWPA Standard), and logo of inspecting company.

1.03 STORAGE

- A. Store lumber a minimum of 6 inches off the ground, in a dry, well-ventilated place, protected from the weather.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Lumber: "Standard" Grade Douglas Fir, Hem-Fir, White Pine, Southern Pine, or Spruce-Pine-Fir pressure preservative treated in accordance with the American Wood Preservers Association (AWPA) Standard U1, Commodity Specification A for the requirements listed under Use Category UC2 and kiln dried to 19 percent moisture content after treatment.
1. Use Category UCFB: Wood nailers and blocking intended for fire protection and is used in exterior construction, exposed to weather (UCFB).
- B. Nails, Screws, and Bolts: ASTM A653 Class G185 hot dipped galvanized, zinc or cadmium plated, or silicon bronze.

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1. Screws and Bolts for fastening to Aluminum:
Stainless steel, Type 304 or 316.
- C. Expansion Anchors: G185 Hot dipped galvanized steel wedge anchors, FS FF-S-325, Group II, Type 4, Class 1.
- D. Toggle Bolts: Cadmium or zinc plated tumble - wing type; FS FF-B-588.
- E. Separation Membrane For Aluminum Metals: Self adhering, self sealing, rubberized asphalt sheet membrane.
 1. Physical Properties:
 - a. Thickness: 40 mils minimum ASTM D 3767 Method A.
 - b. Tensile strength: 250 psi ASTM D 412.
 - c. Elongation (ultimate failure of the rubberized asphalt) 250% ASTM D 412 Die C Modified).
 - d. Permeance: 0.05 Perms max.) ASTM E 96.
 2. "Ice And Water Shield" by W.R. Grace Co., 62 Whittemore Ave., Cambridge, MA 02140, (800) 354-5414; "Deck Guard" by Polyguard Products Inc., P.O. Box 755, Ennis, TX 75120, (800) 541-4994; "MetalSeal" by NEI Advanced Composite Technology, 50 Pine Road, Brentwood, NH, (800) 998-4634.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install nailers and blocking true to line and plane within a tolerance of 1/8 inch in 10 feet.
- B. Fit joints neatly with no more than 1/16 inch space between abutting members.
- C. Do not install nailers or blocking across bonding expansion joints.
- D. Attach nailers and blocking securely as required to properly support the items that will be attached to them.
- E. Space fasteners equally at not more than 16 inches on center and 4 inches from each end of each member, unless noted otherwise. Secure the nailers and blocking with the following types of fasteners:

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1. To Cast-In-Place Concrete: Use expansion anchors or self-threading masonry screws.
 2. To Wood: Use nails or screws.
 3. To Metal: Use bolts or self-tapping screws.
- F. Countersink fasteners if they interfere with the proper installation of items to be attached to the nailers and blocking.

3.02 APPLICATION OF SEPARATION MEMBRANE

- A. Installing Separation Membrane:
1. Install 1 ply of underlayment over the entire horizontal and vertical surface of pressure treated wood nailers and blocking lapping each ply 2 inches over the preceding ply so that no aluminum material comes in contact with pressure treated wood.

END OF SECTION

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SECTION 070150

MAINTENANCE OF MEMBRANE ROOFING

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Sheet Metal Flashing and Trim: Section 076100.

1.02 SYSTEM DESCRIPTION

- A. The Work of this Section consists of minor modifications to the existing warranted roof system.
1. Existing Type of Roof System: Built Up Bituminous Roofing System.
 2. Existing Roof System Manufacturer: Contractor to verify with the City of New York existing roof system manufacturer.

1.03 SUBMITTALS

- A. Submittals Package: Submit the product data and quality control submittals specified below at the same time in one complete package. Partial submittal will not be considered.
- B. Product Data:
1. Membrane manufacturer's installation instructions and details for the Work of this Section.
 2. Manufacturer's data sheets for all materials required for the Work of this Section.
- B. Quality Control Submittals:
1. Material Certification: Letter from the existing roof system manufacturer certifying that the materials used for the Work of this Section are approved for use with the existing system.
 2. Warranty Certification: Letter from the existing roof system manufacturer certifying that the Work of this Section will not modify or void the existing warranty.

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1.04 QUALITY ASSURANCE

- A. Applicator's Qualifications: The Work of this Section shall be performed by an applicator having not less than three (3) years with roofing systems similar to existing.
- B. Material Certification: The materials used for the Work of this Section shall be approved by the existing roof system manufacturer.
- C. Warranty Certification: The Work of this Section shall not modify or void the existing roof system warranty.
 - 1. Submit a copy of the Contract Documents to the existing roof system manufacturer for review and approval.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to the site in the manufacturer's labeled, unbroken containers.
- B. Storage and Handling: Store materials in a dry, well ventilated place protected from the weather.
 - 1. Volatile liquids shall be stored in a separate storage building or trailer, or removed from the Site at the end of each work day.
 - 2. Store volatile liquids at temperatures recommended by the manufacturer.
 - 3. Store adhesives at temperatures between 60 degrees F and 80 degrees F.

1.06 PROJECT CONDITIONS

- A. Do not execute the Work of this Section unless the substrate is dry and free of dirt and debris.
- B. Moisture Protection:
 - 1. Cover, seal or otherwise protect the roof and flashings so that water cannot accumulate or flow under completed portions. When and where necessary to accomplish this, provide temporary water cut-offs in accordance with the membrane manufacturer's written specifications.
 - 2. Limit the removal of existing materials to areas that can be completely re-roofed or temporarily protected within the same day.

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- C. Do not smoke or use open flames near volatile materials.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Provide all the materials required to complete the Work of this Section. All materials shall be approved by the existing roof system manufacturer.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install the Work of this Section as shown on the Contract Drawings and in accordance with the existing roof system manufacturer's written instructions.
1. Install the Work of this Section so that the watertight integrity of the existing system is not compromised.

END OF SECTION

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PHASE II BUILDING RENOVATIONS

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SECTION 071613
CEMENTITIOUS WATERPROOFING

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

N/A

1.02 SUBMITTALS

- A. Product Data: Catalog sheets, specifications, and application instructions for each material specified.
- B. Samples:
 - 1. Cementitious Coating: One pound of dry powder mix.
 - 2. Acrylic Additive: One quart.
- C. Quality Control Submittals:
 - 1. Test Reports: If requested by the Commissioner, furnish certified test data issued by an independent testing laboratory, demonstrating that the products submitted comply with the required physical properties.

1.03 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Manufacturer's Qualifications: The manufacturer shall have qualified technical representatives with the technical expertise to advise the Contractor of application procedures required for coating materials under the particular job conditions.
- B. Field Examples:
 - 1. On actual surfaces designated by the Commissioner, apply a sample application of the cementitious waterproof coating. Apply coating on at least 100 sq ft of surfaces.
 - 2. Sample application accepted by the Commissioner will be used as the standard of comparison for the Work.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Storage and Protection:

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1. Comply with the manufacturer's printed instructions for material storage requirements.

1.05 PROJECT CONDITIONS

- A. Environmental Requirements:
1. Do not apply materials to surfaces that contain free water or frost.
 2. Do not apply materials when temperature is below 40 degrees F or will fall below 40 degrees within 24 hours.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Cementitious Waterproof Coating: Factory blended and packaged dry powder mix; "ThoroSeal" by Thoro/BASF Building System, "Sonoblock" by Sonneborn/BASF Building System, or other material complying with Federal Specification TT-P-0035 and having the following physical properties:
1. Compressive Strength (ASTM C 109): 4000 psi at 7 days, 6000 psi at 28 days.
 2. Tensile Strength (ASTM C 190): 250 psi at 7 days, 425 psi at 28 days.
 3. Flexural Strength (ASTM C 348): 350 psi at 7 days, 1000 psi at 28 days.
 4. Absorption (ASTM C 67): 3.6 percent.
 5. Freeze/Thaw Resistance (ASTM C 666, Method B): No cracking or delaminating after 200 cycles.
 6. Water Vapor Transmission (ASTM E 96, Procedure A): 11.420 grams/meter²/24 hours.
 7. Resistance to Wind-Driven Rain (FS TT-P-0035): No moisture penetration after 8 hours at 98 MPH wind pressure.
 8. Accelerated Weathering (FS TT-P-0035): No checking, cracking, or loss of adhesion after 5000 hours of weatherometer exposure.
 9. Static Test (FS TT-P-0035): No failure after 30 minutes 30 lbs. per sq. ft.
- B. Color: As selected by the Director from manufacturer's standard colors.
- C. Acrylic Additive: "Acryl 60" by Thoro/BASF Building System, "Acrylic Additive" by Sonneborn/BASF Building System, or a comparable

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product recommended by the cementitious coating manufacturer.

- D. Cleaning Agents: Products recommended by the cementitious coating manufacturer for the particular conditions.

PART 3 EXECUTION

3.01 PREPARATION

- A. Protection: Protect adjacent surfaces not required to be coated.
- B. Surface Preparation:
 - 1. Remove all debris, dirt, dust, and other substances that are detrimental to the application of the cementitious waterproofing.
 - 2. Remove existing paints and coatings. Use cleaning agents and methods recommended by the cementitious coating manufacturer.
 - 3. Remove laitance and efflorescence with a 10 percent solution of hydrochloric (muriatic) acid, followed by a thorough wash with clean water.

3.02 APPLICATION

- A. Plan the Work with enough workers and scaffolding so breaks in the cementitious coating application are at natural stopping points recommended by the coating manufacturer and approved by the Commissioner.
- B. Mixing: Follow the cementitious coating manufacturer's recommendations unless otherwise specified.
 - 1. Use clean containers for mixing.
 - 2. Power mix materials with mechanical mixing equipment.
 - 3. Mix only the amount of material that can be applied within "open time". Do not re-work set or hardened material; remove such material from the site.
 - 4. Liquid solution shall consist of 3 parts of clean water and 1 part acrylic additive,

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- unless otherwise recommended by the cementitious coating manufacturer for the particular conditions.
5. Proportion and mix liquid solution and powder in accordance with the cementitious coating manufacturer's recommendations for the application indicated.
- C. Immediately before application, dampen dry surfaces with clean water.
 - D. Apply cementitious coating in compliance with the coating manufacturer's recommendations unless otherwise specified.
 - E. Cementitious Waterproof Coating:
 1. Brush on and evenly distribute a base coat of the mix at the minimum rate of 2 lbs per sq yd. Cure base coat for 24 hours or longer if required by environmental conditions. Apply a finish coat of the mix at the minimum rate of 1 lb per sq yd.
 3. Brush apply a base coat of the mix at the minimum rate of 2 lbs per sq yd. Trowel apply a second coat at the minimum rate of 12 lbs per sq yd or sufficient material to bring the surface true and level. After material stiffens, sponge float to an even uniform surface to obtain desired texture.
 - G. Apply minimum total coating thickness of 1/8 inch, or coating thickness(es) indicated on the Drawings.
 - H. Curing: If rapid drying occurs, spray the finished surface with a water mist as required to keep the surface damp. Water mist for the period of time recommended by the cementitious coating manufacturer.

3.03 CLEANING

- A. Clean adjacent surfaces that have been soiled or defaced by the execution of this Work.
- B. Remove protective covers.

END OF SECTION

SECTION 075100
BUILT-UP BITUMINOUS ROOFING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide all built-up bituminous roofing Work as indicated on the Drawings and as specified herein, including, but not limited to, the following:

1. Removal of existing roofing materials, as applicable.
2. Built-up Roofing System
3. Rigid Insulation
4. Vapor Barrier

1.02 REFERENCES

- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.
- B. American Society for Testing and Materials (ASTM).
- C. Underwriters Laboratories, Inc. (UL).
- D. National Roofing Contractors Association (NRCA).
- E. Thermal Insulation Manufacturers Association (TIMA).
- F. Federal Specifications (FS)
- G. Factory Mutual System (FMS)
- H. United States Environmental Protection Agency (EPA)

1.03 SUBMITTALS

A. Submittals Package - General

Submit the Shop Drawings, Product Data, Samples, and Quality Control Submittals specified below at the same

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time as a package. All submittal packages must be submitted prior to the Pre-Installation conference.

B. Product Data

1. Catalog sheets, Specifications and installation instructions for each material specified.
 - a. Product data for reflective roof coatings for application on mineral surfaced cap sheet shall bear an EPA "Energy Star" label.
2. Manufacturer's Warranty: Sample copy of the membrane manufacturer's 20-year warranty covering workmanship and materials.

C. Membrane Manufacturer's Letter of Intent to Warranty

Prior to the Pre-Installation Conference, the Contractor shall register the project with the membrane manufacturer and shall submit the membrane manufacturer's letter of intent to warranty the roof as specified herein.

D. Shop Drawings

1. When there is a proposed deviation from the Contract Documents, submit the revised detail labeled as such for approval. The revised detail shall show existing conditions and shall be referenced directly to the related details on the Contract Drawings.
2. Submit an accurate layout of the tapered insulation showing the slopes to the drains. Show cross Section Drawings illustrating the location and thickness of tapered insulation pieces and filler pieces. Show the thickness of the insulation system at high and low points.
3. Submit an accurate layout of the wood nailers showing their required locations, and required spacing between nailers. Show the direction of the felt run in relation to the slope of the deck and the wood nailers.
4. Grade Survey
 - a. Contractor shall engage a New York State Licensed Surveyor to control accurately the thickness and slope of the concrete fill, screed coat and drain elevations. The cost of

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the Surveyor's services shall be included in Contractor's bid price. Submit all grade Drawings required hereinafter with Surveyor's seal and signature to Commissioner for an approval.

- b. The elevations shall be taken at the perimeter of roofs, at all drains, at high and low spots, and on the edges of square grid not exceeding 25'-0".
- c. All Drawings shall be done at the scale of 1/8" = 1'-0". All elevations shown on the Drawings shall be referred to a convenient datum accessible at all times regardless of the stage of Work, and not altered by the Work.
- d. Submit grade Drawings indicating all existing and proposed grade elevations required to establish a minimum slope of 1/8" per foot prior to removal of existing roofing system.

E. Samples

- 1. Roofing Membrane: 13 in. by width of roll, each type.
- 2. Base Flashing: 13 in. by width of roll, each type.
- 3. Vent Base Sheet: 13 in. by width of roll, each type.
- 4. Insulation: One 6" sq. piece, each type.
- 5. Aggregate Surfacing: 1 pound.
- 6. Fasteners: 3, each type.
- 7. Field sample of Bitumen (each load)
- 8. Termination Bar
- 9. Expansion joint flashing

F. Quality Control Submittals

- 1. Test Reports
 - a. Roof drain and leader test

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- b. Roof deck fastener pullout test
- c. Daily bitumen temperature charts
- d. Field test strips (if requested)
- e. Roof flood test
- f. Field test report certifying that the installed gravel conforms to the specified requirement of at least 30% solar reflectance.

2. Certifications and Approvals

- a. Written certification that the roof system, including the specific insulation, has been tested in conjunction with the type of structural roof deck and roof slope applicable to the project and has achieved an Underwriters Laboratories Class A or B external fire resistance rating.
 - 1) Acceptable Certification: Letter from Underwriters Laboratories, or a copy of the Underwriters Laboratories classification listing for the roofing system.
- b. Letter from the roofing membrane manufacturer certifying that the insulation is approved for use with the roofing system.
- c. Bitumen certification for each delivery
- d. Submit prior to installation a signed statement for moisture testing of roof deck.
- e. Written certification that roof assembly meets or exceeds Factory Mutual wind uplift resistance rating I-90.
- f. Certification by an approved independent testing laboratory certifying that the gravel proposed for the project conforms to specified requirements for solar reflectance.
- g. Membrane manufacturer's written approval of the Contractor's method of protecting the roof during other construction operations, including existing roofing that is to remain under an existing warranty.

3. Qualifications

a. Membrane Manufacturers Certifications:

- 1) Submit a letter certifying that the manufacturer has been experienced in the submitted system for a minimum of 3 years.

b. Applicator's Certification:

- 1) Letter from the membrane manufacturer certifying that the applicator is licensed or approved to install the roof system.
- 2) Names, address, and telephone numbers of buildings where the applicator has installed built-up roofing systems that have the manufacturer's warranty issued. Include the types of built-up roofing systems installed, the manufacturer's name, and the warranty numbers.
- 3) Letter certifying that the installer have installed at least three built-up roofing systems and are thoroughly familiar with all aspects of the installation.

G. Contract Closeout Submittals

1. Contractor's 2-year guarantee
2. Manufacturer's 20-year guarantee.

1.04 QUALITY ASSURANCE

A. Membrane Manufacturer's Qualifications

1. The manufacturer shall have the technical expertise and qualified technical representatives to quickly resolve questions or problems which may arise both during and after the Work is completed.
2. The manufacturer shall have been experienced in the built-up roof system in the United States for a minimum of 3 years.
3. The manufacturer shall provide the names, addresses, and telephone of previous projects of

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comparable size, scope, and complexity as the Work of this Section.

4. The manufacturer must require that the roof system be installed by a licensed or approved applicator has not less than three (3) years of experience in the application of built-up roof system installation.

B. Roofing Installation Qualifications

1. Roofing Firm Qualifications

- a. Installation of a built-up roofing systems of 3-ply (or greater) membranes, or of roofing system specified in the Contract Documents, including all related sheet metal work.
- b. In continuous operation of installing such roofing systems.
- c. Certified installer for nationally recognized roofing materials manufacturer.

C. Fire Department Regulations

Equipment and fuel shall meet the requirements of the New York City Fire Department.

D. Fire Hazard Classification

The built-up roof system shall have an Underwriters Laboratories Class A or B External Fire Resistance rating; as determined by tests conducted in conformity with UL-790 (ASTM E108).

1. The roof system, which includes a specific generic type of insulation and in some instances a specific name brand insulation, shall have been tested in conjunction with the type of structural roof deck and roof slope applicable to the project.

E. Company Field Advisor

Secure the services of a Company Field Advisor of the membrane manufacturer for a minimum of 16 working hours. The Field Advisor shall be certified in writing by the manufacturer to be technically qualified in design, installation, and servicing of the required products. Personnel involved solely in sales do not qualify. The Field Advisor shall be present at the Pre-Installation

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Conference and at the beginning of the actual membrane installation for the purpose of:

1. Rendering technical assistance to the Contractor regarding installation procedures of the system.
2. Familiarizing the Commissioner with all aspects of the system including inspection techniques.
3. Answering all questions which might arise.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Delivery

1. Roofing materials shall be delivered to the site in the manufacturer's unbroken containers and shall bear the manufacturer's printed labels.
2. a. All bitumen delivered in cartons must have the following printed on the carton:

Manufacturer
Type (ASTM)
SP (Softening Point)
FP (Flash Point)
FBT (Finished Blowing Temperature)
EVT (Equiviscous Temperature)

- b. All bitumen delivered in tanker trucks shall be accompanied by the manufacturer's certification stating: manufacturer's name, type, softening point range, flash point, and compliance with ASTM Specifications.

- 1) Certification for Asphalt Bitumen shall also state the equiviscous temperature range and the finished blowing temperature range.

B. Storage and Handling

1. Store materials a minimum of 6" off the ground, in a dry, well ventilated place protected from the weather. Enclosed trailers are recommended.
2. Do not stock pile aggregate surfacing materials on unsurfaced felt which are in place on the roof.
3. Mark for identification all materials which become wet. Remove such materials for the site.

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4. Handle roll goods with care; store on end. Do not use roll goods which have been damaged.

1.06 PROJECT CONDITIONS

A. Temperature

Do not apply built-up roofing when the deck or air temperature is below 40° F.

- B. Do not execute the Work of this Section unless the substrate is dry, and free from debris and dust.

C. Moisture Protection

1. Cover, seal, and otherwise protect the roof and all flashings so that water cannot accumulate or flow under the completed portions. When and where required, provide temporary water cut-offs in accordance with the roofing manufacturer's written Specifications.

2. For existing roof: Limit the removal of existing materials to areas that can be completely re-roofed or temporarily protected within the same day. Temporary protection shall not be considered part of the system.

1.07 GUARANTEE AND WARRANTY

A. Contractor's Guarantee

Two year written guarantee covering defects in materials and/or workmanship. Performance Bond shall be for the entire two-year period. Also includes repair to all ancillary areas damaged due to leaks.

B. Manufacturer's Warranty

In addition to the Contractor's guarantee, furnish the membrane manufacturer's printed No-Dollar-Limit 20-year warranty for the Work of this Section. The warranty shall include but not be limited to, repair or replacement of components of the roofing system that fail in materials or workmanship. Failure includes roof leaks.

The warranty shall cover all components of the Work of this Section, including but not limited to asphalt, sheets, membranes, insulation, composition flashing, cements, warrantable penetration seals, penetration flashing and low flashing, coatings, expansion joints,

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fasteners, cants, and gravel. The roof system shall be warranted to remain watertight for 20 years. In the event that defects or leaks occur the manufacturer shall make repairs to correct them.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Asphalt Primer and Asphalt
 - 1. GAF Building Materials Corp., South Bound Brook, NJ.
 - 2. Johns Manville, Denver, CO.
 - 3. Tamko Asphalt Products, Joplin, MO.
 - 4. Or approved equal.
- B. Base Sheet
 - 1. GAF GAFGLAS #75.
 - 2. Johns Manville GlasBase.
 - 3. Tamko Glass-Base.
 - 4. CertainTeed Glasbase Base Sheet
- C. Vent Base Sheet
 - 1. GAF GAFGLAS Stratavent.
 - 2. Johns Manville Ventsulation.
 - 3. Tamko Vapor-Chan.
 - 4. CertainTeed Channel Vent Base Sheet
- D. Roofing Membrane, Vapor Barrier and Cover Strip
 - 1. GAF GAFGLAS Ply 6.
 - 2. Johns Manville GlasPly Premier.
 - 3. Tamko TamGlas Premium.
 - 4. CertainTeed FlintGlas Premium Ply Sheet Type VI
- E. Insulation

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1. Composite Insulation Board
 - a. GAF GAFTEMP Composite Board Insulation
 - b. Johns Manville Fesco Foam Isocyanurate, or ENRGY 3 Plus.
 - c. AC Foam II with 1/2" perlite on top, by Atlas Energy Products, Atlanta, GA.
 - d. CertainTeed Flintboard Iso Plus Composite
2. Isocyanurate Insulation Board
 - a. GAFTEMP Isotherm R by GAF.
 - b. ENRGY 3 Isocyanurate by Johns Manville.
 - c. AC Foam II by Atlas Energy Products, Atlanta GA.
 - d. CertainTeed Flintboard Iso
3. Top Layer of Three Layer System
 - a. 1/2" High-density fiberboard or perlite by GAF.
 - b. 1/2" Retro-fit Board by Johns Manville.
 - c. 1/2" Perlite Board by Atlas.

F. Base Flashing

1. Two base plies:
 - a. GAF GAFGLAS Ply 6.
 - b. Johns Manville GLasPly Premier.
 - c. Tamko TamGlass Premium.
 - d. CertainTeed FlintGlas Premium Ply Type VI
2. One ply cap sheet:
 - a. GAF Ruberoid MOP FR.
 - b. Johns Manville Dynaflex.
 - c. Tamko Awaplan Premium.

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- d. CertainTeed Flintlastic Premium FR-P
- G. Mineral-Surfaced Modified Bitumen Asphalt Membrane
 - 1. GAF Ruberoid MOP FR
 - 2. Johns Manville Dynakap
 - 3. Tamko Awaplan Premium
 - 4. CertainTeed Flintlastic Premium FR-P
- H. Reflective Elastomeric Coating for Mineral-Surfaced Membrane
 - 1. GAF Topcoat MB Plus
 - 2. Johns Manville TopGard 5000
 - 3. Tamko Tam-Star White Elastomeric Coating
 - 4. CertainTeed FlintCoat-W
- I. Flashing Cement
 - 1. Johns Manville MBR two-part Flashing Cement or Type III Steep Asphalt (or equivalent by GAF, Tamko, or CertainTeed).
- J. Warrantable Penetration Seal, Penetration Flashing, and Low Flashing Materials
 - 1. M-weld Roofing Systems-Building Solutions, "M-Curb System" penetration seal system.
 - 2. Kemco, "Kemperol BR" penetration flashing and low flashing system.
 - 3. Johns Manville, "PermaFlash" penetration flashing and low flashing system.
 - 4. Triflex, "Triflex D" penetration flashing and low flashing system.
 - 5. Applied Liquid Technologies, "Protec" penetration flashing and low flashing system.
 - 6. Approved Equal
- K. Elastomeric Cement

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1. Tremco Manufacturing Co. "Poly roof".
 2. Durok Bldg. Materials "Durok Rubber Cement".
 3. Karnak Chemical Corp. "AR Elastomeric".
- L. Perlite Cant Strip
1. GAF
 2. Johns Manville
 3. Atlas
- M. Premanufactured Expansion Joint Flashing at Wall and Roof Expansion Joint
1. Johns Manville

2.02 MATERIALS FOR VAPOR BARRIER

- A. Asphalt Vapor Barrier over Concrete Deck or Existing Asphalt Vapor Barrier, and concrete fill/screed
1. Primer: Asphalt primer, ASTM D41.
 2. Steep Asphalt: ASTM D 312, Type III.
 3. Asphalt Fiberglass Felt: Asphalt impregnated glass mat, ASTM D 2178, type VI. UL Classified.
- B. Asphalt Vapor Barrier over Steel Deck
1. Underlayment Board: Perlite mineral insulation board, 3/4" thick, ASTM C728. UL Classified.
 2. Steep Asphalt: ASTM D 312, Type III.
 3. Asphalt Fiberglass Felt: Asphalt impregnated glass mat, ASTM D2178, Type VI. UL Classified.

2.03 MATERIALS FOR BUILT-UP MEMBRANE

- A. Mineral Surfaced Asphalt Membrane
1. Steep Asphalt (Slopes 1/2" to 3" per Foot): 190°, Type III.
 2. Special Steep Asphalt: 220°, Type IV (slopes 3" to 6" per Foot).

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3. Asphalt Fiberglass Felt: Asphalt impregnated glass mat, ASTM D 2178, Type VI. UL Classified.
4. Mineral-Surfaced Modified Bitumen Cap Sheet: Reinforced modified Bitumen Cap Sheet, ASTM D6163 or D6164, Type II, that incorporates the properties of both a strong fiberglass or polyester mat with an elastomeric base material consisting of modified bitumen material and fire retardant additives. UL Classified.

2.04 COMPOSITION FLASHINGS

A. Built-Up Base Flashing

1. Asphalt Fiberglass Felt: Asphalt impregnated glass mat, ASTM D 2178, Type VI. UL Classified.
2. Reinforced Modified Cap Sheet: Reinforced modified Bitumen flashing, ASTM D6163 or D6164, Type II, that incorporates the properties of both a strong fiberglass or polyester mat with an elastomeric base material consisting of modified bitumen material and fire retardant additives. UL Classified.
3. Steep Asphalt: 190°, ASTM D312 Type III.
4. Modified Flashing Cement.

B. Coverstrips

1. Asphalt Fiberglass Felt: Asphalt impregnated glass mat, ASTM D 2178, Type VI. UL Classified.
2. Reinforced Modified Cap Sheet: Reinforced modified Bitumen flashing, ASTM D6163 or D6164, Type II.
3. Plastic Cement: Flashing grade, fibrated asphalt roofing cement, ASTM D 4586. UL Classified.
4. Modified Flashing Cement

2.05 INSULATION

- A. Insulation must be compatible with the membrane manufacturer for use with the specified roof system.
 1. Provide type and thickness of insulation as indicated on the Drawings. Isocyanurate insulation shall have a 15 year time weighted average Long

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Term Thermal Resistance (LTTR) value of at least 6 for each inch of insulation thickness, as determined in accordance with ASTM C1289 or CAN/ULC-S770 (Standard Test Method for Determination of Long Term Thermal Resistance of Closed Cell Thermal Insulating Foams). Perlite and fiberboard shall have an R-value of at least 1.3 for 1/2" thickness.

2. Types

- a. Isocyanurate - ASTM C 1289, Type II, Class 1, Grade 2
- b. Perlite - ASTM C 728
- c. Fiberboard - ASTM C 208

3. All insulation: Factory Mutual, Class 1 or U.L. Class A.

B. Rigid Insulation

Provide insulation using one of the assemblies described below in subparagraph 1. or subparagraph 2.

1. Three Layers of Insulation:

Three layers of insulation consisting of two layers of isocyanurate insulation, and a top layer of fiberboard or perlite insulation.

- a. Isocyanurate Insulation: Closed cell isocyanurate foam core skinned on both sides with factory applied facers of the generic type recommended by the membrane manufacturer. ASTM C 1289, Type II, Class 1, Grade 2. UL Classified. Thickness of bottom layer shall be 2". Thickness of second layer shall be not less than 1.5" and not more than 2". Board size 48"x48" maximum.
- b. Top layer: 1/2" thick minimum perlite board insulation complying with Federal Specification HH-1-529b, ASTM C728 and UL Classified.

Provide additional layers of isocyanurate insulation where required to meet indicated thermal insulating values, subject to approval of the membrane manufacturer and the Commissioner. Total

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thickness of insulation shall be as indicated on the Drawings.

2. Two Layers of Insulation:

Two layers of insulation consisting of one layer of isocyanurate insulation, and a top layer of composite insulation. Board size 48"x48" maximum.

a. Base layer: Closed cell isocyanurate foam core skinned on both sides with factory applied facers of the generic type recommended by the membrane manufacturer. ASTM C 1289, Type II, Class 1, Grade 2. UL Classified. Thickness 2".

b. Top layer: A layer of isocyanurate foam integrally bonded to a layer of perlite or wood fiberboard on one side and a nonasphaltic fiberglass mat on the other. Total thickness of top layer 1.5" minimum, 2.5" maximum.

Provide additional layers of isocyanurate insulation where required to meet indicated thermal insulating values, subject to approval of the membrane manufacturer and the Commissioner. Total thickness of insulation shall be as indicated on the Drawings.

2.06 FASTENERS

A. Fasteners for Securing Vent Base Sheet to Concrete deck, Precast Concrete Plank

Corrosion-resistant fastener such as Olympic Heavy Duty Deck Screw or Drive-pin fastener through 3" diameter sheet metal disk.

B. Fasteners For Securing Roofing Membrane To Wood Nailers

Annular ring roofing nail with one-inch solid cap, "Cap Nail" as manufactured by Simplex Nails Inc., Americus, Georgia, or approved equal.

C. Fasteners for Securing Built-Up Base Flashing

1. Concrete and Masonry Surfaces: Hardened, masonry drive pin, thru one inch dia. sheet metal disk.

2.07 MISCELLANEOUS MATERIALS

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A. Cant Strips (For built-up base Flashings)

Preformed fiberboard, ASTM C208.

B. Tapered Edgestrips (around drains and at other areas where insulation must be feathered down)

Preformed fiberboard, ASTM C208.

C. Materials for Penetration Seals, Penetration Flashing, Low Flashing, and Pitch Pockets

1. Warrantable penetration seals, penetration flashing, and low flashing shall be of materials described in subparagraph a., b., c., d. or e., below, as deemed appropriate by the roofing manufacturer and shall be included in their 20-year warranty. Verify with roofing manufacturer which system is appropriate for the proposed application and is included in the warranty. Provide primers, mineral granule surfaced target patches, catalysts, and other auxiliary materials to complete each system in accordance with requirements of the seal and flashing system manufacturer and the roofing system manufacturer.

a. Warrantable penetration seal: M-Curb System, consisting of a preformed structural urethane outer shell filled with a two-part urethane rubber sealant such as M-Thane. A structural high viscosity urethane adhesive such as M-Bond shall be used to bond the shell to the roof deck as well as seal the edges.

b. Warrantable penetration flashing and low flashing: Kemporol BR system, consisting of polyester fleece-reinforced two-component polyester resin membrane.

c. Warrantable penetration flashing and low flashing: Johns Manville PermaFlash system, consisting of polyester fabric-reinforced two-part asphalt modified urethane flashing membrane.

d. Warrantable penetration flashing and low flashing: Triflex D system, consisting of polyester fleece-reinforced two-component polyester resin membrane.

e. Warrantable penetration flashing and low flashing: Applied Liquid Technologies Protec

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system, consisting of glass fiber fabric reinforced two-component polyester resin membrane.

2. Traditional Pitch Pocket

Provide traditional pitch pocket only where specifically indicated as such in the contract documents. At other penetrations provide warrantable penetration seals or warrantable penetration flashing.

a. Mortar: ASTM C 270, Type S.

b. Elastomeric Cement: Non-sag, cold applied, trowel grade, single or two-component rubber elastomer. Minimum elongation 400 percent.

D. Termination Bar

1. One-inch wide by 1/4" thick Type 316 stainless steel bar used for low flashing detail.

E. Premanufactured expansion joint flashing at wall and roof expansion joint

1. Flexible, exterior weatherproof cover, factory manufactured combination of 60-mil neoprene membrane bonded to .018 Type 316 stainless steel.

2. Provide factory fabricated corners and T's for all intersections.

PART 3 - EXECUTION

3.01 VERIFICATIONS OF CONDITIONS

A. Testing Existing Roof Drains and Conductor Pipes

Before commencing with the Work, water test all existing drains and conductor pipes, submit a written report to the Commissioner, indicating which drains or conductors, if any, are not functioning properly.

3.02 REMOVALS

A. Remove all existing roofing, including, but not limited to, felts, asphalt, coal tar, and vapor barrier, down to sound, clean screed coat/concrete deck, as well as vertical surfaces to which flashing will be adhered or which will be caulked.

3.03 EXAMINATION

- A. Verify that Work of other trades which penetrates the roof deck or requires personnel and equipment to traverse the roof deck has been completed.
- B. Examine surfaces for inadequate anchorage, foreign material, moisture, and unevenness that would prevent the execution, and quality of application, of the built-up roofing system as specified.
- C. Do not proceed with application of built-up roofing system until defects are corrected.

3.04 PREPARATION

- A. Repair of fill/screed or concrete deck.
- B. Moisture Testing for Roof Deck
 - 1. All roof decks where roofing is to be installed shall be thoroughly dried out and free of moisture before installing new membrane. There shall be two (2) test areas for every 2500 square feet of area to be roofed.

The Commissioner shall be present at these tests. The Contractor shall submit a signed statement that the tests have been performed and list the test results for each area.

- a. Roof Deck Dryness Test (NRCA Approved Method)
 - 1) Use approximately one pint of bitumen that is specified for use in the roof membrane, heated to a temperature that will ensure an application temperature of 400°F. See Built-up Roofing, Section IV-B, (Equiviscous Temperature) NRCA roofing and waterproofing manual.
 - 2) Pour the bitumen on the surface of the deck. If the bitumen foams, the deck is NOT dry enough to roof.
 - 3) After the bitumen has cooled, an attempt should be made to strip the bitumen from the deck surface. If the bitumen strips clean from the deck, the deck is NOT dry enough to roof.

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- 4) If the tests prove the deck is damp, it shall be allowed to dry and be retested until dry enough for the roofing to be installed. Depending on the severity of the moisture condition, the Commissioner may permit the installation of vented base sheet in lieu of one ply of vapor barrier.

C. Priming (for concrete decks)

Prior to application of vapor barrier, and after the deck has passed the dryness test, apply asphalt primer to concrete deck surface at the rate of one gallon per square.

3.05 HEATING BITUMEN

A. Preparation

1. Use separate kettles or tankers for heating different types of asphalt.
2. The heating process shall be strictly regulated by means of an automatic thermostatic control of an approved type for positive temperature control. Kettles or tankers shall be the immersion tube type, fire by Liquid LP gas, and shall have 100% safety shutoff.
3. Equip each kettle or tanker with a recording thermometer that will graphically indicate and record on a chart the maximum and minimum temperatures to which materials have been heated. Recording thermometers shall be capable of accurately recording temperatures as high as 600°F and as low as 0°F. The thermometers shall be properly maintained at all times. Kettles or tankers without recording thermometers in good working condition shall not be used. At the end of each working day, turn the chart from the thermometer on each kettle or tanker over to the Commissioner. If any bitumen is overheated, remove it from the site in the presence of the Commissioner.

If any underheated or overheated bitumen has been applied on the roof, remove that portion of the roof.

4. Preferred location for locating and heating the kettle is to place on the ground, with the asphalt pumped to the roof. If kettle must be placed on the roof, place kettle on a heavy sheet metal tray on dunnage. Metal tray shall extend 18" beyond the sides and ends of the kettle and be turned up 1" at all edges. Verify deck construction. Kettle shall not be placed on thin plank or steel roof deck construction.
 - a. Only one gas cylinder shall be on the roof at any one time. Locate the cylinder at least four feet away from the kettle. Vertically brace the cylinder and shade it from the sun.
 - b. Provide fire extinguishers on the roof in the vicinity of the kettles as required to ensure the safety of the roof.

B. Heating Asphalt Bitumen

1. Heat the bitumen in accordance with the Equiviscous Temperature information furnished by the bitumen manufacturer for that specific run of bitumen.
 - a. In no case shall be asphalt be heated to or above the actual COC Flash Point (ANSI/ASTM D92); or the finished blowing temperature for more than 4 hours.
 - b. Maintain the temperature of the bitumen at the point of application within the Equiviscous Temperature Range. Use insulated pipes, buckets, luggers, and other insulated roofers equipment as required by the field conditions.

Contractor must have at least one hand held thermometer for each crew installing hot asphalt in order to ensure compliance with EVT.
2. Application temperature: The accepted application temperature range for asphalt is the equiviscous temperature, (EVT) 225°F. All felt installation must occur in this range to be acceptable.

3.06 MIXING FLASHING CEMENT

- A. Mix flashing cement components in accordance with printed instructions of the manufacturer.
- B. Johns Manville MBR Two Part Flashing Cement

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1. Store activator, and mix materials at temperatures stated in the manufacturer's instructions. After mixing, pot life time varies with ambient temperature, and must not be exceeded.
2. Utilize the specific mechanical mixing equipment and method of mixing required by the manufacturer. Do not exceed mixing time of three minutes, or as otherwise stated in the manufacturer's instructions.

3.07 INSTALLING VAPOR BARRIER

- A. Installing Vapor Barrier over Concrete Deck, Existing Vapor Barrier or Lightweight Fill/Screed
 1. Install 2 plies of asphalt fiberglass felt shingle fashion. Lap plies 19" over each preceding ply.
 2. Embed each ply in a solid mopping of hot steep asphalt applied at the rate of 20 lbs per square. Broom in each ply for complete embedment.
- B. Extend the vapor barrier beyond all edges and openings of the roof so that it can be turned up over the insulation a minimum of 6".
 1. If vapor barrier is punctured, repair immediately with fiberglass felt embedded in hot bitumen.
 2. Install the insulation and roofing membrane immediately (same day) as the vapor barrier is installed. Where not possible, protect the vapor barrier with a glaze coat of hot bitumen applied at the rate of 15 lbs per square.

3.08 INSTALLING VENT BASE SHEET AND VAPOR BARRIER

- A. When directed by the Commissioner after results of the moisture test or when shown on Drawings, install one ply of vent base sheet followed by a vapor barrier of Type VI felt. Vent sheets shall be butted.
- B. Using vent base sheet, start at the low edge of the roof. Fasten along the lap of the ply at intervals not to exceed 9" and stagger-nail down 11" apart with fasteners spaced at approximately 18" o.c. stagger. Provide additional fasteners spaced as required to meet specified wind uplift resistance rating. Prior to installation, have pullout tests performed by the fastener manufacturer to determine the appropriate fastener. All drilling is

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to be done using a high-speed rotary percussion drill with three-jaw chuck.

- C. Run vent base sheet up the perimeter or parapet walls to the height of the counter flashing, mechanically fastening at spacing indicated above. This will allow for proper perimeter venting detail.
- D. Stop vent base sheet short by 2'-0" at all drains and penetrations. Seal the edges with a 6" strip of Type VI felt set in steep asphalt or flashing cement.
- E. Install one ply of asphalt fiberglass felt with 2" overlap on sides and 6" end laps. Embed each ply in a solid mopping of Type III hot steep asphalt applied at the rate of 20 lbs per square. Broom ply for complete embedment.

3.09 INSTALLING INSULATION

A. Installing layers of insulation:

- 1. Install layers of insulation under area of roofing to achieve required thickness. Install the insulation in separate layers with the long joints of each layer running in the same direction in a continuous straight line perpendicular to the direction of the roof membrane. Stagger end joints between rows. Butt edges and ends snugly. "Occasional" joint widths up to 1/8" will be allowed.
- 2. Install the layers of insulation with joints of each succeeding layer staggered from the joints of the previous layer a minimum of 6" in each direction.
- 3. Set each layer of insulation in a full solid hot mopping of Type III steep asphalt applied at the rate of 30 lbs per square. Press the insulation into the bitumen to a firm and uniform bearing.

B. Keep insulation absolutely dry at all times. Discard insulation that contains moisture.

- 1. Install only as much insulation as can be covered with roofing membrane the same day.
- 2. Discard all units with broken corners or similar defects.

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3. At roof drains, terminate the insulation with tapered edge strips so that all flashing and coverstrip joint laps can be made within the tapered portion.
 4. Set all cant strips in a solid application of hot bitumen so they are firmly anchored to the deck and the vertical surface.
- C. Installation of insulation shall be in strict compliance with the Manufacturer's recommendations.

3.10 INSTALLING BUILT-UP ROOF

- A. Before application of roof membrane, turn vapor barrier over insulation at all edges and openings and embed in a full hot application of bitumen. At round openings, seal the edges of the insulation with a trowel coat of plastic roof cement.
- B. Installing Built-Up Roof Membrane
1. For asphalt built-up roofs, provide built-up roof membrane consisting of 4 plies of asphalt fiberglass felt. Embed each ply in solid mopping of hot asphalt applied at the rate of 25 lbs per square.
 2. Where mineral-surfaced built-up roof is indicated on the Drawings, provide built-up roof membrane consisting of 3 plies of asphalt fiberglass felt and one ply of mineral-surfaced modified bitumen cap sheet. Embed each ply in solid moppings of hot asphalt applied at the rate of 25 lbs per square.
- C. Requirements for Back Nailing Felts (if slopes 1/2" per foot and greater)
1. Back Nailing: On roof slopes 1/2" per foot or more, back nailing of the felts may be required by the roofing membrane manufacturer.
 - a. Back nail the felts when required by the manufacturer.
 - b. Back nail the felts in strict accordance with the manufacturer's Specification for nailing pattern, and nail spacing.
 2. For Insulated Decks:

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Wood Nailers: Nominal 4" wide wood nailers, the same thickness as the insulation, are required on all slopes requiring back nailing.

- a. Install the wood nailers at and parallel to, ridges, hips, and eaves. Between ridges and eaves, install nailers perpendicular or parallel to the roof slope, as required by the manufacturer.
- b. Space the nailers in strict accordance with the manufacturer's Specifications.

D. Laying Felt

1. Start laying felts, using split sheets as necessary to secure the required number of plies and laps. Provide 10" minimum end laps. Roll all roofing felt not more than 5'-0" behind the mop as it spreads the bitumen, brooming and pressing the felts into the bitumen from the center outward to the edges so as to ensure thorough sticking and a smooth, firm surface, free of blisters, wrinkles, or buckles.
2. Use three persons for the application of roofing felt as follows; one person to spread bitumen in front of the roll, one person to roll out the felt and one person to smooth out the felt with a stiff street broom or squeegee. The roofing may be installed with an approved applying machine and broomed or squeegeed smooth producing an equivalent result. In no case shall the felt be rolled out dry and then laid in the bitumen.
3. Direction of Felt Run (on Slopes of 1/2" per foot and greater):

Install the felts perpendicular to the wood nailers.
4. Where built-up flashings are required, extend the mopped roofing felts 2" beyond the top edge of the cant.
5. Where sheet metal base flashings are required, turn up mopped roofing felts a minimum of 4" on all vertical surfaces or apply additional felt plies.
6. Where cant type gravel stops (fascia) are required, carry all membrane plies past the edge of the water

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dam member and cut off flush with the face of the cant and seal the top with modified flashing cement.

7. Any protection ply or temporary ply shall not be deemed a part of the 4-ply system.

E. Phasing of Roofing Membrane Installation

1. Phasing of ply felt application will not be allowed in any case.

2. Where necessitated by job conditions and with approval of the Commissioner, a protective glaze coating may be applied as follows:

- a. Apply protective glaze coatings in addition to all other coatings or moppings specified in this Section. Reduction or omission of specified prime coats, mopped bitumen, flood coats or finish coats in lieu of glaze coatings is not permitted.

3. All exposed felts, regardless of type, must be protected with specified surfacing or glaze coating by the end of each working day.

4. Continue the installation of roofing materials on the following work day (weather permitting). Glaze coated surfaces must be clean and dry to ensure complete bonding of felts or coatings.

F. Temporary Flashings

Provide a temporary waterproof seal at all membrane edges, penetrations, drains, etc. Unless complete flashings are installed immediately (same working day) following the membrane application.

G. Installing Built-Up Flashings

1. Apply asphalt primer to all vertical surfaces before application of built-up flashings.
2. Install built-up flashing consisting of 2 plies of asphalt fiberglass felt, topped with one ply of modified bitumen flashing membrane.
3. Cut all felts into strips not longer than 12 feet. Provide 3" minimum end laps. Stagger all end laps. Cut modified bitumen flashing membrane the width of the roll.

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4. Install all plies in hot steep asphalt or if desired install felt in plastic cement, and modified flashing in MBR adhesive.
5. Fasten the top edge of the built-up flashings 8" oc.
6. At low flashing locations, install a termination bar fastened the top edge of the built-up flashings at 8" oc and seal with MBR flashing cement.
7. Seal top edge of flashing with a trowel coat of plastic cement and fabric. If roof system is vented, do not permanently seal the top edge of the vent base sheet. Prior to installation of final cap flashing, temporarily protect juncture to prevent water from getting behind the vent base system.
8. Where indicated, provide premanufactured expansion joint covers in accordance with the Drawings and the manufacturer's recommendations.

H. Installing Metal Flashings and Coverstrips

1. Asphalt Roofs: Plastic Asphalt Cement.
2. Prime metal surfaces and embed portions of all metal flashing which extend over the roof surface in plastic cement.
3. Completely cover all portions of metal flashings which extend over the roof surface with coverstrips consisting of a modified bitumen membrane over asphalt fiberglass felt, each set in plastic cement. Provide strips that are at least 8" and 12" wide respectively. In all cases, carry the strips past the edge of the metal flange and beyond the edge of the preceding felt 4" min. Seal junction of metal and coverstrip with plastic cement. Seal all edges and seams of the modified membrane with modified flashing cement.

Coat and surface the top ply to match the adjacent roofing membrane.

4. At roof drains, install cover strips within the slope to the drain so that they do not impede the flow of water from the roof.

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I. Installing Warrantable Penetration Seals, Penetration Flashing, and Low Flashing

Provide seals or flashing at penetrations of the roof membrane as required for a watertight roof system, and as indicated on the Drawings, and as approved by the roof system manufacturer for inclusion in the roofing warranty.

Bonding surfaces to which the seal or flashing are to be placed shall be clean and free of moisture, dirt, grease, oil, loose material, foreign material, and debris.

Substrate surfaces shall be prepared and primed per manufacturer's instructions. Abrade and grind surfaces and clean metal surfaces to bare metal when recommended by the manufacturer. Follow manufacturers' recommendations for required temperature of substrate and materials, and for filling of voids. Provide bead of resin or other sealing material at terminations of the system as recommended by the manufacturer.

1. M-curb System

- a. For roofs without granular cap sheet, provide target patch of mineral granule surfaced modified bitumen cap sheet, in solid mopping of hot asphalt, and as required by the roofing system and curb system manufacturers. Granule surfaced cap sheet shall have all loose granules removed from the surface by vacuuming and power brooming.
- b. Set the urethane shell in the structural adhesive. Seal the edge of the shell and membrane with adhesive.
- c. Fill the urethane shell with the pourable sealer to the top, ensuring that no ponding will occur.

2. Kemperol BR System

- a. For roofs without granular cap sheet provide target patch of mineral granule surfaced modified bitumen cap sheet, in solid mopping of hot asphalt, and as required by the roofing system and flashing system manufacturers. Granule surfaced cap sheet shall have all loose granules removed from the surface by vacuuming and power brooming.

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- b. Cut fleece reinforcement to required dimension and shapes required to ensure fleece will be flat against surfaces.
 - c. Brush resin to all surfaces and roll into fleece. Add additional material to ensure complete saturation. Total dry film thickness of membrane 70 to 80 mils minimum as recommended by manufacturer.
3. PermaFlash System
- a. Lay out reinforcement fabric around penetration and cut to fit. Fabric shall wrap around penetration and bridge all vertical to horizontal transitions.
 - b. Mix Johns Manville two part MBR Flashing Cement in accordance with the manufacturer's instructions, and as described in this specification Section. Apply fluid-applied flashing directly to prepared substrate. Adhere fabric by pressing into the fluid-applied flashing while still wet. Completely cover fabric with at least 60 mil coat wet film thickness of fluid-applied flashing, and as required by the manufacturer.
4. Triflex D System
- a. For roofs without granular cap sheet provide target patch of mineral granule surfaced modified bitumen cap sheet, in solid mopping of hot asphalt, and as required by the roofing system and flashing system manufacturers. Granule surfaced cap sheet shall have all loose granules removed from the surface by vacuuming and power brooming.
 - b. Cut fleece reinforcement to required dimension and shapes required to ensure fleece will be flat against surfaces.
 - c. Apply an even base layer of resin; work fleece reinforcement into the wet resin, removing trapped air, using roller; apply an even topcoat of resin wet-on-wet to ensure full saturation of the fleece reinforcement. Finished dry film membrane thickness 70 to 80 mils minimum, as recommended by manufacturer.
5. Protec system

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- a. For roofs without granular cap sheet provide target patch of mineral granule surfaced modified bitumen cap sheet, in solid mopping of hot asphalt, and as required by the roofing system and flashing system manufacturers. Granule surfaced cap sheet shall have all loose granules removed from the surface by vacuuming and power brooming.
- b. Cut fabric reinforcement to required dimension and shapes required to ensure reinforcement will be flat against surfaces.
- c. Apply resin evenly to substrate. Install fabric reinforcement directly into the resin avoiding any folds and wrinkles. Work the resin into the fabric, saturating it. Apply resin evenly to top surface of fabric. Fabric shall be completely saturated with resin. Total dry film thickness of membrane 70 to 80 mils minimum, as recommended by manufacturer.

J. Filling Traditional Pitch Pockets

Fill bottom half of pitch pocket with cement mortar. Fill remaining half of pitch pocket with elastomeric cement. Slope surface to shed water.

K. Applying Reflective Elastomeric Coating (where roof with mineral cap sheet is indicated on the Drawings)

1. Provide coating on roofs with mineral surface cap sheet and on adjacent base flashings.
2. Allow underlying materials to cure for period of time recommended by the coating manufacturer.
3. Prepare substrate and apply base coat or primer as recommended by the manufacturer.
4. Apply reflective elastomeric coating as recommended by the manufacturer, and as required for EPA "Energy Star" qualification. Follow manufacturer's instructions for environmental conditions, number of coats, time in between coats, coverage, and other application requirements.
5. Areas that are inaccessible beneath mechanical equipment are not required to be coated.

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3.11 FLOOD TESTING

- A. After completion of roofing work specified above, all drains shall be plugged and all roofs of above locations of Work shall be flooded with a minimum of 1" of water above the high points. Water shall remain for a minimum of 24 hours. If leaks occur, Contractor shall do all necessary work to correct them and flood testing shall be repeated until no leaks occur. Where roofing work is limited to areas immediately adjacent to parapets or other partial roof replacement areas, the flood test shall include the area of new work and extend at least an additional 4 feet past the transition to the existing membrane.
- B. Water test all existing drains and conductor pipes. Any drains or pipes found to be clogged or pipes found to be leaking, other than those found during the pre-construction testing that were not directed to be repaired, shall be repaired/replaced at the Contractor's expense.

3.12 FIELD QUALITY CONTROL

A. Field Samples

Draw a quart sample from each load of bitumen arriving at the job site in the presence of the Commissioner, who will take it for laboratory analysis.

B. Test Strip (if requested by the City of New York)

1. When and where directed by the Commissioner, and before surfacing is applied to the completed membrane, cut a strip 3" wide by 40" long thru all plies of the built-up roofing. Number of such test strips may be as required by the Commissioner. After removal of the strip, immediately repair the area by applying the same number of plies of the same kind of felt and bitumen to fill the hole level. Repeat the same number of plies of the same kind of felt and bitumen over the filled strip with the first ply lapping each edge 12" and each succeeding ply lapping the preceding ply by at least 3" on all edges. Apply surfacing material to match the adjoining roof. Turn the test strips over to the Commissioner for examination.
2. If the test strips indicate the roofing system complies with the Specifications, the City of New York will bear the cost of the test strip Work.

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3. If the strips indicate the roofing system does not comply with the Specifications, the Contractor shall bear the cost of the test strip Work, and shall repair or replace all roofing Work as required to comply with the Specifications, at the Contractor's expense.

C. Non-Compliance

1. Failure of the bitumen samples or the test strip samples to meet the Specification requirements will be cause for rejection of the Work.

3.13 SOLAR REFLECTANCE FIELD TEST

- A. After installation of the aggregate surfacing an independent testing laboratory retained by the Contractor shall conduct solar reflectance tests of the completed roof. The laboratory shall be subject to approval by the Commissioner.
- B. Testing shall be by ASTM test method E903, E1918, or C1549. The roof area shall be divided into sections of 1000 square feet each, and test measurements shall be performed in the center of each section or as directed by the Commissioner. Three repetitions shall be made of each measurement. Testing shall be performed on a clear day, between the hours of 11:00 AM and 2:00 PM, when there are no clouds or other obstructions in the field of view.
- C. If initial testing indicates areas with less than 30% solar reflectance the contractor shall remove and replace the gravel in those areas with gravel that complies with the 30% requirement, at no additional cost to the City of New York, and retest.
- D. Submit a final test report, prepared and certified by the testing laboratory, certifying that the installed aggregate surfacing conforms to specified requirements for solar reflectance of not less than 30%.

3.14 INSPECTION

- A. After all roofing system Work is completed, an inspection shall be made by the roofing system manufacturer's representative (Company Field Advisor). The representative shall certify that roofing system has been installed according to the Specifications.

3.15 CLEANING

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- A. Remove bitumen from surfaces other than those requiring bituminous coatings.
- B. Remove all debris from roof area.

END OF SECTION

SECTION 076100
FLASHING AND SHEET METAL

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide all flashing, trim and sheet metal Work as indicated on the Drawings, as required for the completed Work, and as specified herein. The Work shall include, but shall not be limited to, the following:
1. Roof Flashings (various types)
 2. Wall Flashings (various types)
 3. Shop-Formed Copings
 4. Flashing at expansion joints
 5. Flashing at roof mounted equipment and roof penetrations.

1.02 REFERENCES

- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.
- B. Sheet Metal and Air Conditioning Contractors National Association (SMACNA).
- C. Copper Development Association (CDA).
- D. American Society for Testing and Materials (ASTM).
- E. Federal Specifications (FS).

1.03 SUBMITTALS

- A. Shop Drawings
1. Show the manner of forming, jointing, and securing the metal flashings, trim, and other specified sheet metal items. Include expansion joint connections, and the method of forming waterproof connections to adjoining construction.
- B. Product Data

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1. Catalog sheets, specifications, installation instructions for each item specified except for shop or job formed items, solder and flux.

C. Samples

1. Materials for Flashings: One 6" sq piece, for each type material specified.
2. Anchors: Two, each type required.
3. Cap Flashings: Full section, 6" long.
4. Coping: Full section, 12" long.
5. Termination bar, 12" section. Termination bar fasteners, stainless steel, 3 of each type. Termination bar sealant, 1 container.

D. Guarantee

- E. Certificates of qualifications as specified under Article titled "Quality Assurance".

F. Product Certificates

Certify that materials of this Section, such as copper/fabric flashing, sealants, termination bar, and fasteners, are compatible with all components of the air barrier system and other Project materials that contact them.

1.04 QUALITY ASSURANCE

- A. Except as otherwise shown or specified, comply with applicable recommendations, details, and standards of CDA, and SMACNA.

- B. All metal Work shall be ink-stamped at intervals, identifying

Manufacturer, type metal, and gage or thickness.

- C. Manufacturer's Recommendations

For factory fabricated items, follow the manufacturer's recommendations and installation instructions unless specifically shown or specified otherwise.

- D. Materials containing asbestos are prohibited.

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1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products of this Section in such manner to protect them from damage.

1.06 PROJECT CONDITIONS

- A. Do not execute the Work of this Section unless the Commissioner is present, unless otherwise directed.
- B. Make the roof and all uncompleted flashings watertight at the end of each work day.

1.07 GUARANTEE

- A. The Contractor shall provide a two (2) year written guarantee, covering the flashing and sheet metal materials and workmanship. Should any defects occur during the stated period, they shall be corrected immediately, and all damage caused by such defects shall be corrected; all corrective Work shall be at the Contractor's expense.

PART 2 - PRODUCTS

2.01 MATERIALS FOR FLASHING FABRICATION

- A. Plain Copper Sheet: Cold rolled copper, ASTM B 370.
- B. Lead Coated copper Sheet: Cold rolled copper, ASTM B 370. Lead coating; ASTM B101, Type 1 weighing 0.06 to 0.07 lbs per sq ft applied to each side.
- C. Stainless steel Sheet: Dead soft fully annealed stainless steel sheet, ASTM A240, Type 316, sulfur content .005 or less, 2D dull finish.

2.02 MANUFACTURED MATERIALS

- A. Copper/fabric flashing: consisting of a full sheet of copper, weight of copper core not less than 5 ounces per square foot, permanently bonded with rubber based adhesive to and between 2 layers of fiberglass fabric. Each layer of fiberglass fabric shall be 0.3 oz. per sq. ft. minimum weight, with minimum 10x20 threads per inch. Flashing shall be compatible with air barrier system, sealants, adhesives, and other adjacent materials.

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1. Manufacturers / Products
 - a. York Manufacturing, Inc., Sanford, Maine: Multi-Flash 500 Copper Fabric Flashing.
 - b. Advanced Building Products Inc., Springvale Maine: Copper Sealtite 2000.
 - c. Sandell Manufacturing Company, Schenectady, NY: Sandell Copper Fabric Flashing NA.
 - d. Or approved equal.

2.03 FASTENERS

- A. Nails: "Stronghold" type large flat head roofing nail.
 1. For Copper: Hardened copper.
 2. For Stainless Steel: Stainless steel.
- B. Screws, Bolts, and other Fastening Accessories
 1. For Copper: Copper or brass.
 2. For Stainless Steel: Stainless steel type 316.
- C. Anchors: Provide one of the following types:
 1. Hammer driven anchors, consisting of a stainless steel drive pin and a corrosion resistant metal expansion shield inserted thru a stainless steel disc with an EPDM sealing washer.
 2. Self-tapping, corrosion resistant, concrete and masonry screw inserted thru a stainless steel disc with an EPDM sealing washer.
- D. Fasteners for Through-Wall Flashing Termination Bar
 1. Tapcon Concrete Screw: stainless steel.

2.04 MISCELLANEOUS MATERIALS

- A. Solder: Composition of block tin/pig lead of proportion recommended by the metal manufacturer, stamped either 50/50 or 60/40 "Warranted".
- B. Flux: Paste or acid type as recommended by the metal manufacturer.
- C. Bituminous Coating: FS TT-C494.
- D. Type 3 Sealant (For concealed sealant joints of thru-wall cap receivers and other areas which require concealed sealant).

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One part butyl rubber sealant; Pecora BC-158, PTI 707, or Woodmont chem-Calk 300.

- E. Termination Bar (For through wall copper/fabric flashing): Plastic. Provide material compatible with the air barrier system. York Manufacturing Co., Sanford, Maine.
- F. Flashing Sealants, Cements, Mastics, and Adhesives: Provide products recommended in writing by the flashing manufacturer, and compatible with all adjacent materials, including components of the air barrier system. Materials containing asbestos are prohibited.
 - 1. Where low modulus silicone sealant is indicated provide ASTM C 920, single-component, neutral-curing silicone; Class 100/50, Grade NS, Use NT, Use O.

2.05 FABRICATION

- A. General: Where practicable, form and fabricate sheet metal work in the factory or shop. Produce bends and profiles accurately to the indicated shapes. Where not indicated or specified, follow the applicable requirements of the reference standards listed in PART 1. Hem exposed sheet metal to eliminate all sharp edges and corners.
- B. Cap Flashing (one-piece)
 - 1. Copper: 16 oz.
 - 2. Lead Coated copper: 16 oz.
 - 3. Stainless Steel: 26 ga (0.018").
- C. Cap Flashing (two-piece) with In-Wall Cap Flashing Receivers. Provide same metals as in B., above. All corners of coping flashing and of cap receivers shall be factory prefabricated: mitered and lapped approximately 1" at corner, and fully soldered or welded.
 - 1. Cap Flashing: Three way mortar bond type receiver with snap fit cap flashing. Acceptable products: "Keystone Two-Piece cap Flashing" as manufactured by Keystone Flashing Co., Philadelphia, PA and "Cheney Prefabricated Snap Lock Cap Flashing" as manufactured by Cheney Flashing Co., Trenton, NJ., and or approved equal.

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D. Cap Flashing with Concrete Reglet (Same metals as in B., above).

1. Reglet with 45 degree slot, and snap fit cap flashing. Hooked edge of cap flashing shall lock into reglet. Acceptable products: "Cheney Type-A Snap Lock Concrete Reglet"; and "Keystone Concrete Reglet".

E. Base Flashing

Note: This base flashing is not to be used for roofs; refer to Roofing Sections for roof base flashing.

1. Copper: 20 oz.
2. Lead Coated copper: 20 oz.
3. Stainless Steel: 24 ga (0.025").

F. Shop-Formed Coping

1. Copper: 20 oz.
2. Lead Coated Copper: 20 oz.
3. Stainless Steel: 24 ga (0.025").

G. Factory Fabricated Formed Coping

Complete system including 0.063" aluminum coping, anchor plates, joint drainage system, concealed joint covers and all other accessory components. "Permasnap Coping" as manufactured by W.P. Hickman Company, Asheville, NC; or "Snap-Lok Coping" as manufactured by MM Systems Corp, Tucker, GA.

1. Finish: Anodized; color: as selected by Commisioner.

H. Metal Expansion Joint Cover

1. Copper 20 oz.
2. Lead Coated Copper: 20 oz.
3. Stainless Steel 24 ga (0.025").

I. Roof Drain Flashing

1. Sheet lead, 6 lbs per sq. ft.

J. Pitch Pockets

1. Copper: 16 oz.
2. Lead Coated Copper: 16 oz.

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3. Stainless Steel: 26 ga (0.018").

K. Crickets

1. Copper: 16 oz.
2. Lead Coated Copper: 16 oz.

L. Sealant Edge Flashing

1. Stainless Steel: 26 gauge, hemmed edge.

M. Flashing at Cast Stone Window Sill

1. Stainless Steel: 26 gauge.

N. Gutters and Downspouts

1. Materials: Plain copper or lead coated copper.
2. Components
 - a. Hung Gutter: 20 oz.
 - b. Downspouts: 16 oz.
 - c. Conductor Heads: 16 oz.
 - d. Outlet Tube, offsets and elbows: 16 oz.
 - e. Continuous cleats: 20 oz.
 - f. Gutter Hanger Brackets: 1" x 3/16" brass or copper bar.
 - g. Gutter Braces: 1" x 1/8" brass or copper bar.
 - h. Gutter Stiffener: 3/4" x 1/8" brass or copper bar.
 - i. Downspout Support Hanger: 1" x 1/16" brass or copper.
 - j. Wire Strainers: 18 gage copper wire, 1/2" mesh.
3. Fabrication
 - a. Fabricate gutters, downspouts and fittings to shapes and profiles indicated on Drawings; if details are not indicated, follow applicable requirements of the Architectural Sheet Metal Manual of SMACNA.
 - b. Form gutters and downspouts in 10'-0" long sections.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Coordinate the work of this Section with other Work for the correct sequencing of items which make up the entire system of weatherproofing or waterproofing.

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3.02 PREPARATION

- A. Do not install the Work of this Section unless all necessary nailers, blocking and other supporting components have been provided.
- B. Do not install the Work of this Section unless all substrates are clean and dry. Do not cover air barrier membrane until the completion of a curing period if recommended by the membrane manufacturer.

3.03 INSTALLATION

A. Isolation

Separate dissimilar metals from each other with a dielectric coating to prevent galvanic action. Coating shall be bituminous or synthetic material as required for compatibility with adjacent materials.

B. Tinning and Soldering

- 1. Use soldering irons (heavy coppers) as Industry standard. Torch soldering is not acceptable.
- 2. Clean, flux and tin all surfaces to be soldered.
- 3. Sweat solder thoroughly into seams, completely filling the seam for the full width.
- 4. Upon completion of soldering, remove all traces of flux residue, and if required, apply a neutralizing wash followed by a clean water wash.

C. Installing In-Wall Cap Flashing Receivers

- 1. Set the flashing so there is mortar above and below the built-in portion. Bonding ribs shall be completely filled with mortar.
- 2. Do not mallet, bend or deform the exposed portion.
- 3. Lap all end joints so they interlock at the first raised rib. Apply Type 3 sealant between the mating surfaces of the built-in portion of the flashing before interlocking end joints.
- 4. All corners shall be factory prefabricated: mitered and lapped approximately 1" at corner, and fully soldered or welded by the manufacturer.

D. Installing Concrete Reglet

- 1. Furnish reglet for installation with formwork, complete with fasteners and filler.

E. Installing Cap Flashing

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1. Form and install the cap to provide a spring tight fit against the base flashing. Lap all end joints and base flashing a minimum of 3". Extend the cap continuously around corners or provide lock seams. Install waterstop flashing at expansion joints.
 2. Cap Flashing for Installation In Reglets:
 - a. Extend the cap flashing into the reglet, applying pressure to securely lock it into position along its entire length.
 - b. Pack the reglet with lead wool to within $\frac{1}{4}$ " of the reglet opening, then fill with sealant and tool to a slightly concave surface.
 3. Surface Mounted Cap Flashing:
 - a. Form the top portion of the cap flashing which comes in contact with the wall surface with a 1" wide bearing surface. Form a 45 degree x $\frac{1}{4}$ " wide stiffener and calking flange along the top edge.
 - b. Apply Type 2 sealant on the back side of the bearing surface.
 - c. Secure the cap flashing to the wall with fasteners spaced 12" oc thru the bearing surface.
 - d. Apply Type 2 sealant along the calking flange.
 4. Cap flashing For Installation in Receivers: Insert the cap flashing into the receiver locking slot. Apply upward pressure along the entire length of the cap flashing so that it is securely locked into position.
 5. Pre-tin and solder with soldering irons (heavy coppers) all inside and outside corners.
 6. Where applicable, release existing soldered lap with soldering iron, install base flashing, dress down and re-solder existing lap.
- F. Dressing Down Existing Cap Flashing
1. Turn up all cap flashings as required to perform the Work. Upon completion of the Work, dress down all disturbed cap flashings so they lie flat against the base flashing.
 2. Secure the cap flashing to the wall surface with fasteners spaced 18" oc.

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3. Install matching metal patches at corners of cap flashings which have been cut to perform the Work. Lap the patches a minimum of 1" on each side of the cap flashing.
 - a. Secure the patch by pop-riveting or by soldering.

G. Installing Base Flashings

1. Form the base flashing with locked and soldered joints into lengths not more than 24'-0" oc.
2. Provide expansion joints a maximum of 24'-0" oc on straight runs and a maximum of 4' from corners. Form expansion joints with a 3" loose locked seam filled with Type 3 Sealant.
 - a. Expansion Joint: slit the cross folded portion of the flashing where it is bent at a right angle. Solder a patch over the slit to avoid binding at the cross fold.
3. Extend the vertical portion of the base flashing a minimum of 3" up behind the cap flashing.
 - a. Where shown on the Drawings, lock the base flashing to the cap flashing with a minimum 3/4" loose lock joint.
4. Extend the horizontal portion of the base flashing a minimum of 4" and terminate in a 1/2" folded edge. Secure with nails spaced 3" oc staggered.

H. Installing Formed Metal Coping

1. Form the coping into lengths not exceeding 8'-0".
2. Join coping sections with 1-1/2" loose locked seams filled with Type 3 sealant.
3. Hook the front and back edges of the coping over continuous metal edge strips. Nail the edge strip 6" oc.

I. Installing Factory Fabricated Formed Metal Coping

Install in accordance with the manufacturer's written instructions unless shown or specified otherwise.

J. Installing Expansion Joint Cover

1. Install combination edge strip and cap flashing over the base flashing. Secure the edge strip along

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the top of the curb and lap the base flashing a minimum of 3". Lap each individual length a minimum of 3".

2. Form the expansion joint cover with standing seam joints not to exceed 10'-0" oc.
3. Turn the edges of the cover over the edge strip. Allow clearance of one half the width of the expansion joint between all edges of cover and edge strip.

K. Reflashing Existing Drains

Remove the existing dome strainer, clamping ring and lead flashing from existing roof drains. Install 34" square lead flashing turned into drain body and reinstall clamping ring and strainer. If necessary, tap existing clamping ring bolt holes and install new clamping ring bolts.

L. Installing Pitch Pockets

1. Form the pitch pocket with 4" wide flashing flanges. Extend the pitch pocket a minimum of 3" above the roof membrane and a minimum of 1" beyond the roof penetration.
2. Solder all construction joints.

M. Installing manufactured copper/fiberglass fabric flashing.

1. Installation
 - a. All surfaces to receive the copper/fiberglass flashing shall be reasonably smooth, free from irregularities.
 - b. On horizontal masonry surfaces lay flashing in a fresh bed of mortar above and below. When recommended by the flashing manufacturer the flashing may be laid on a coat of recommended sealant, and with a fresh bed of mortar above the flashing. Spot vertical surfaces with mastic or other recommended material to hold flashing in place until masonry is set, and secure as detailed.
 - c. Install the flashing in continuous lengths with the minimum number of joints. Door and window flashing shall be installed in one continuous length from side to side.

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- d. At corners, beams, columns, and at other junctures, fit flashing to the proper contour.
 - e. Trim flashing to terminate flush with the exposed face of masonry wall, except at masonry indicated to have deeply raked joints, and as otherwise indicated.
 - f. Fold flashing at ends to form dams.
2. Spandrels: Start flashing cut flush with the outside face of the wall; go over the stainless steel sealant edge as shown on Drawings, adhered to sealant edge flashing with a full coat of low modulus silicone sealant. Go up inside the wall cavity as indicated on the Drawings. Then go thru the wall turning up on the inside face of the wall not less than 2", or provide a continuous termination bar as indicated on the Drawings to seal flashing to backup masonry or concrete after air barrier membrane is applied. Fasten bar to substrate 8" on center, with stainless steel fasteners anchored into pre-drilled pilot holes. Provide a continuous bead of low modulus silicone sealant along top of termination bar to completely seal the bar and flashing to the substrate. Confirm that all materials are compatible with the air barrier system.
3. Heads: Start flashing covering the toe of lintel angle or as shown on the Drawings; go over the lintel on a full coat of low modulus silicone sealant. Go up inside the wall cavity as indicated on the Drawings. Then go thru the wall turning up at the inside not less than 2", or where indicated on the Drawings provide a continuous termination bar as specified for Spandrel flashing. Extend flashing at least 6" on each side of the opening. Turn flashing at the ends, forming a 2" deep pan running entirely thru the wall. All corners shall be folded, not cut.
4. Joints: Lap joints at least 6", coating the contacting surfaces with mastic or other material recommended by flashing manufacturer.

N. Sealant Edge

Provide stainless steel sealant edge flashing on relieving angles as indicated on the Drawings. Form flashing as required to suit lipped brick or other configuration. Adhere to relieving angle with a full

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coat of low modulus silicone sealant. Seal joints with sealant. Edge shall be hemmed.

O. Flashing at Cast Stone Window Sill

Provide 26 gauge stainless steel flashing as indicated on the Drawings, on bed of mortar, and cover with mortar. Install in one continuous length from side to side. Provide end dams at least 2" high, fully soldered or welded, forming a pan.

P. Gutters and Downspouts

1. Connection to Existing Construction where applicable: Tie the items of Work in with the existing work to obtain watertight installation. Match the existing installation as much as practicable, unless otherwise specified. Repair and dress adjacent existing components as required to make secure and neat connections with new items.
2. Installation of Hung Gutters:
 - a. Install gutter hanger brackets 3'-0" oc. Install the brackets so there will be a slight pitch in the gutter towards the downspouts.
 - b. Join the gutter sections with 1" wide lapped, riveted, and soldered seams. Use 3/16" diameter rivets spaced 2" o.c.
 - c. Install expansion joints where indicated on the Drawings. If not indicated, place the expansion joints at mid points between the downspouts at maximum intervals of 48 feet.
 - 1) Form the expansion joints with end baffles conforming to the shape of the gutter. Rivet and solder the baffles to the gutter section.
 - 2) Install a cover plate over the baffle.
 - d. Install gutter end pieces, mitered corners and outlet tubes. Solder joints and connections.
 - e. Install a continuous stiffener bar along the top front edge of the gutter. Fold the gutter around the stiffener bar so it is securely locked in place.
 - f. Install gutter braces 3'-0" oc, staggered from the gutter hanger brackets. Secure the braces to the stiffener bar and to the back vertical portion of the gutter with brass or copper bolts.
 - g. Secure the top back edge of the gutter to the gravel stop, eave flashing, or continuous cleat as indicated on the Drawings.

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3. Installation of Downspouts:
 - a. Join the downspout sections with end joints that telescope at least 1½"
 - b. Install necessary offsets and elbows.
 - c. Install a minimum of 2 hangers at each downspout section. Form hangers to keep downspouts 1" away from wall.
 - d. Fasten downspouts to hangers with sheet metal screws.
 - e. Secure hangers to masonry and concrete walls with machine bolts in lead shields and to wood walls with screws.
 - f. Discharge Elbows: Fasten leader shoes to downspouts with a minimum of 3 sheet metal screws.
 - g. Connection to Underground Drains: Fit the downspout neatly into the drain pipe or boot. Caulk the joint with lead wool and seal with sealant.

END OF SECTION

SECTION 078400

FIRESTOPPING/SMOKE SEALS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide firestopping at all penetrations and juncture joints of fire-rated walls, floors and ceilings in accordance with the requirements of the Building Code of the City of New York and BSA or MEA Standards

Firestopping and Smoke Seals shall be provided, but not limited to the following specific locations:

1. Penetrations for the passage of conduit, piping and electrical busways and raceways through fire-rated vertical barriers (walls and partitions), horizontal barriers (floor slabs and floor/ceiling assemblies), and vertical service shafts.
2. Locations shown specifically on the Drawings.

1.02 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1. American Society for Testing and Materials (ASTM)
2. Underwriters Laboratories, Inc. (UL)
3. National Fire Protection Association (NFPA)
4. Warnock Hersey

1.03 SUBMITTALS

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- A. Submit shop drawings of each firestopping or smoke seal system to be installed in the project.
- B. Submit manufacturer's product data including instructions for installing firestopping and smoke seals.
- C. Submit manufacturer's certifications that materials and systems meet or exceed the specified requirements.
- D. Submit certification stating that firestopping and Smoke seals have been completed in full accordance with requirements of this Section and of the Building Code of New York City.
- E. Submit MEA or BSA approval certification for materials and each firestopping or smoke seal system used.

1.04 QUALITY ASSURANCE

- A. All firestopping Work shall be performed by a Subcontractor who will be trained or acceptable to the firestopping manufacturer in the application of its products and systems.

- B. Manufacturer

Minimum of 3 years successful experience in manufacture of firestopping material.

- C. Regulatory Requirements

Conform to U.L. requirements and to requirements of the Building Code of the City of New York and Materials and Equipment Acceptance (MEA) Standards.

- D. Comply with the following for firestopping that is required to be in compliance with 27-345 of the New York City Building Code:

1. ASTM E84 - Surface Burning Characteristics of Building Materials.
2. ASTM E814 - Fire Tests of Through Penetration Firestops.
3. U.L.-1479 - Fire Tests of Through-penetration Firestops.

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4. U.L.- Fire Resistance Directory; Through-Penetration Firestop Systems (XHEZ), and Fill, Void or Cavity Materials (XHHW).
5. U. L. 723 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.05 SYSTEM DESCRIPTION

A. Technical Requirements

1. Firestopping materials shall be UL Classified as "Fill, Void or Cavity Material" for use in Through-Penetration Firestop Systems.
2. Firestop Systems shall provide a fire resistance rating at least equal to the hourly resistance rating of the fire-rated barrier and resist passage of smoke and other gases.

1.06 DEFINITIONS

- A. Penetration: Any opening or foreign material passing through or into a fire-rated barrier.
- B. Fire-Rated: Have the ability to withstand the effects of a standard fire exposure for a specified time period, as determined by qualified testing.
- C. Fire-Rated Barrier: A floor, wall, partition or floor-ceiling assembly able to withstand a standard fire and hose stream test without failure.
- D. Fire resistance rating: The ability of a structure to act as a barrier to the spread of fire and to confine it to the area of origin. Ratings are expressed in hours and apply to beams, columns, floors, ceilings, roofs, walls and partitions.
- E. Firestopping: A means of sealing openings in fire-rated barriers to preserve or restore the fire resistance rating.
- F. Firestop System: A material, or combination of materials, installed to retain the integrity of fire-rated construction by maintaining an effective barrier

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against the spread of flame, smoke or gases through penetrations in fire-rated barriers.

1.07 MANUFACTURER'S CERTIFICATION

- A. Manufacturer shall provide written certification stipulating that its products and systems used in this Project, if installed in accordance with the manufacturer's recommendations, shall provide the firestopping specified in this Section, as indicated by its UL rating for that specific installation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Hilti Construction Chemicals, Inc., Tulsa, OK.
- B. The Carborundum Company, Niagara Falls, NY.
- C. 3M Fire Protection Products, St. Paul, MN.
- D. Bio Fireshield, Inc., Concord, MA
- E. Tremco Sealant Division, Tremco LTD, Toronto, Ontario, Canada.
- F. Specified Technologies, Inc., Somerville, NJ
- G. W. R. Grace & Co., Macungie, PA
- H. RectorSeal Corp., Houston, TX
- I. Or approved equal.

2.02 MATERIALS

- A. Grout and sealant systems shall meet or exceed requirements as specified in Part 1 of this Section.
- B. Firestopping systems shall meet the requirements of ASTM E-814, which include, but are not limited to, the following:

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1. Prevent flame pass-through.
 2. Restrict temperature to not exceed 325 degrees F over ambient on side of assembly opposite flames.
 3. Provide a positive smoke seal.
 4. Withstand hose stream test.
- C. Firestopping materials shall be asbestos-free, emit no toxic or combustible fumes and be capable of maintaining an effective barrier against flame, smoke, gas, and water in compliance with requirements of this Section.
- D. Firestopping materials/systems shall be flexible to allow for normal movement of building structure and penetrating items(s) without affecting the adhesion or integrity of the system.
- E. Firestopping materials shall not require hazardous waste disposal of used containers/packages.
- F. On insulated pipe, the fire-rating classification must not require the removal of the insulation.
- G. Firestopping materials shall be free of solvents and shall not experience shrinkage while curing.
- H. Product names CP25, Metacaulk 1000 or approved equals.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine and confirm the compatibility of surfaces to receive firestopping materials. Verify that surfaces are sound, clean and dry and are ready to receive the firestopping.
- B. Verify that penetration elements are properly located and securely fixed, with the proper space between the penetration element and surfaces of the opening.

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3.02 PREPARATION

- A. Protect adjacent surfaces and equipment from damage.
- B. Clean surfaces of opening.

3.03 INSTALLATION

- A. Install firestopping system in strict accordance with the manufacturer's instructions to obtain the fire-rating required at the specific location.
- B. Provide escutcheons for piping at each side of penetration.

3.04 FIELD QUALITY CONTROL

- A. Inspect all installations to ensure that all work meets the requirements specified.

3.05 CLEANING

- A. Remove excess materials, droppings, and debris; remove excess materials from adjacent surfaces.

3.06 PROTECTION

- A. Protect firestopping installations from damage until completion of all Project Work.

END OF SECTION

SECTION 079200
JOINT SEALERS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide all joint sealer Work as indicated on the Drawings, as required for the completed Work, and as specified herein. This Section includes joint sealants for the following applications:

1. Exterior joints in the following vertical surfaces and horizontal nontraffic surfaces:
 - a. Joints in exterior insulation and finish systems.
 - b. Joints between different materials listed above.
 - c. Perimeter joints between materials listed above and frames of skylights, windows and louvers.
 - d. Other joints as indicated.
2. Interior joints in the following vertical surfaces and horizontal nontraffic surfaces:
 - a. Perimeter joints of exterior openings where indicated.

B. The work of this section shall not take place until all paint has been removed.

1.02 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work

1. American Society for Testing and Materials (ASTM)

1.03 SUBMITTALS

A. Product Data

Catalog sheets, specifications, and installation instructions for each product specified except miscellaneous materials.

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B. Samples for Initial Selection:

1. For general purpose use around windows and at relieving angles, Colors of Exposed Joint Sealants: Match Commissioner's samples. Provide custom colors as specified.
2. For all other uses: provide Manufacturer's color charts consisting of strips of cured sealants showing the full range of Manufacturer's standard colors available for each product exposed to view.

C. Samples for Verification: For each type and color of joint sealant required, provide Samples with joint sealants in 1/2-inch-(13-mm-) wide joints formed between two 6-inch-(150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants

D. Quality Control Submittals

1. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.
2. Installer's Qualifications Data: Affidavit required under Quality Assurance Article.
3. Company Field Advisor Data: Name, business address, and telephone number of Company Field Advisor.
4. Test Results
 - a. Sealant manufacturer's test reports certifying compatibility with all contiguous materials.
 - b. Sealant manufacturer's test reports certifying that the sealant will not stain contiguous materials.
 - c. The results of field adhesion testing.

1.04 QUALITY ASSURANCE

A. Installer's Qualifications

The persons installing the sealants and their supervisor shall be personally experienced in the installation of sealants and shall have been regularly employed by a company engaged in the installation of sealants.

1. Furnish a letter from the sealant manufacturer, stating that the Installer is trained or authorized to install the manufacturer's sealant materials.

B. Container Labels

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Include manufacturer's name, trade name of product, kind of material, federal specification number (if applicable), expiration date (if applicable), and packaging date or batch number.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle joint sealer materials as recommended by the Manufacturer, to protect from damage.

1.06 PROJECT CONDITIONS

A. Environmental Requirements

1. Temperature: Unless otherwise approved or recommended in writing by the sealant manufacturer, do not install sealants at temperatures below 40 degrees F or above 85 degrees F.
2. Humidity and Moisture: Do not install the Work of this Section under conditions that are detrimental to the application, curing, and performance of the materials.
3. Ventilation: Provide sufficient ventilation wherever sealants, primers, and other similar materials are installed in enclosed spaces. Follow manufacturer's recommendations.
4. Do not proceed with installation of joint sealants under the following conditions
 - a. When joint substrates are wet.
 - b. Where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.
 - c. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - d. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.
 - e. Surfaces are frozen.
 - f. Surfaces are superheated by the sun.

B. Protection

1. Protect all surfaces adjacent to sealants with non-staining removable tape or other approved covering to prevent soiling or staining.
2. Protect all other surfaces in the Work area with tarps, plastic sheets, or other approved covering to prevent defacement from droppings.

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3. Protect any painted surfaces which are not included in the Work from impact or damage.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. General Electric Co., Waterford, NY
- B. Dow Corning Corp., Midland, Michigan
- C. Pecora Corp., Harleyville, PA
- D. ChemRex Inc. - Sonneborn, Shakopee, MN
- E. Tremco Sealing and Coatings, Wading River, NY
- F. Sika Corporation, Lyndhurst, NJ
- G. Or approved equal.

2.02 SEALANTS

- A. Type 1 Sealant (for use in vertical expansion joints where movement occurs; for general purpose use around windows, door frames, louvers, and other junctures).
 - 1. One-part low-medium modulus silicone sealant (plus or minus 50% movement); ASTM C920 classifications type S, grade NS, class 25, uses NT, M, G, and A: General Electric Silpruf, Dow Corning's 791, Pecora's 864, Sonneborn's Omniseal, Tremco Spectrem 2 or Sika SikaSil C-955.
 - 2. Silicones shall meet the following requirements:
 - ASTM C719 - Low-Medium Modulus (+ or - 50%). Sealants shall not exhibit any cracking or surface degradation after 5000 hours exposure in the Atlas Twin Arc Weatherometer.
 - ASTM C661 - Shall not incur a durometer increase greater than 10 points.
 - Sealants shall contain zero parts of toxic isocyanurate ingredients.

Provide custom colors for use around window perimeters, to match window frame, or other colors as determined by the Commissioner.

Thoroughly clean surfaces on which sealant is to be applied and prime surfaces as recommended by Manufacturer before applying sealant.

- B. Type 1C Sealant - For general use around windows, door frames, louvers, cast stone copings and other junctures.

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One-part silicone sealant; ASTM C920 classifications type S, grade NS, class 25, uses NT, M, G, A and O: Pecora 890; Tremco Spectrum-1 or Sika's SikaSil C-995.

Provide custom colors for use around window perimeters, to match window frame, or other colors as determined by the Commissioner.

2.03 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.
- D. Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
 - 1. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), O (open-cell material) or B (bicellular material with a surface skin, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:
- E. Bond Breaker Tape: Polyethylene or other plastic tape as recommended by the sealant manufacturer; non-bonding to sealant; self-adhesive where applicable.
- F. Flexible Sealing Tape: Sealing tape shall be manufacturer's standard pre-applied to closure system at the factory under controlled conditions.

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G. Glazing Material:

1. Cleaner, Primers, and Sealers: Type recommended by glazing material manufacturer.
2. Edge Blocks: Provide neoprene or silicone as required for compatibility with glazing sealants. Provide blocks with a Shore A hardness of 55±5.
3. Provide sealant backer rods, primers, cleaners, and sealers of type recommended by glass and sealant manufacturers.
4. Waterproofing: Continuous snap-in or slip-in neoprene glazing gaskets applied above and below the glazing. Use neoprene spacers as required, at all extrusions for glazing separation; at no point shall glazing come in contact with metal parts. So not use butyl tape or similar type materials.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine all joint surfaces for conditions that may be detrimental to the performance of the completed Work. Do not proceed until satisfactory corrections have been made.

3.02 PREPARATION

- A. Clean joint surfaces immediately before installation of sealant and other materials specified in this Section.
1. Remove all loose materials, dirt, dust, rust, oils and other foreign matter that will impair the performance of materials installed under this Section.
 2. Remove lacquers, protective coatings and similar materials from joint faces with manufacturer's recommended solvents.
 3. Use methods such as grinding, acid etching or other approved and manufacturer's recommended means, if required, to clean the joint surfaces, assuring that the sealant materials will obtain positive and permanent adhesion.

3.03 JOINT BACKING INSTALLATION

- A. Install bond breaker tape in relaxed condition as it comes off the roll. Do not stretch the tape. Lap individual lengths.

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- B. Install backer rod of sufficient size to fill the joint width at all points in a compressed state. Compress backer rod at the widest part of the joint by a minimum of 25 percent. Do not cut or puncture the surface skin of the rod.

3.04 SEALANT INSTALLATION

- A. Except as shown or specified otherwise, install sealants in accordance with the manufacturer's printed instructions.
- B. Install sealants with ratchet hand gun or other approved mechanical gun. Where gun application is impracticable, install sealant by knife or by pouring, as applicable.
- C. Finishing

Tool all vertical, non-sag sealants so as to compress the sealant, eliminating all air voids and providing a neat smoothly finished joint. Provide slightly concave joint surface, unless otherwise indicated or recommended by the manufacturer.

- 1. Use tool wetting agents as recommended by the sealant manufacturer.

3.05 WET SEALANT GLAZING

- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.06 FIELD QUALITY CONTROL

- A. Field Adhesion Testing of Sealants - Test completed elastomeric joints as follows:

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1. Extent of Testing: Test completed elastomeric sealant joints as follows:
 - a. Perform 10 tests for the first 1000 feet of joint length for each type of elastomeric sealant and joint substrate.
2. Test Method - Test joints by hand pull method described below:
 - a. Make knife cuts from one side of the joint to the other, followed by two cuts approximately 2 inches long at sides of joint and meeting cross cut at one end. Place a mark 1 inch from cross-cut end of 2 inch piece.
 - b. Use fingers to grasp 2 inch piece of sealant between cross-cut end and 1" mark, pull firmly at a 90 degree angle or more in direction of side cuts while holding a ruler along sides of sealant. Pull sealant out of joint to the distance recommended by the sealant manufacturer for testing adhesive capability, but not less than that equaling specified maximum movement capability in extension, hold this position for 10 seconds.
 - c. For joints with dissimilar substrates, check adhesion to each substrate separately. Do this by extending cut along one side, checking adhesion to opposite side.
3. Inspect joints for complete fill, for absence of voids, and for joint configuration complying with specified requirements. Record results in a field-adhesion-test log.
4. Inspect tested joints and report on the following:
 - a. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.
 - b. Whether sealants filled joint cavities and are free of voids.
 - c. Whether sealant dimensions and configurations comply with specified requirements.
5. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion

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results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.

6. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.
7. Evaluation of Field Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.07 CLEANING

- A. Immediately remove misapplied sealant and droppings from metal surfaces with solvents and wiping cloths. On other materials, remove misapplied sealant and droppings by methods and materials recommended in writing by the manufacturer of the sealant material.
- B. After sealants are applied and before skin begins to form on sealant, remove all masking and other protection and clean up remaining defacement caused by the Work.

END OF SECTION

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SECTION 081102
STEEL DOORS AND FRAMES

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Finish Hardware: Section 087100.
- B. Glass and Glazing: Section 088100.

1.02 SUBMITTALS

- A. Shop Drawings: Show details of each frame type, elevation and construction for each door type, conditions at openings, location and installation requirements for finish hardware including cutouts and reinforcements, details of connections, and anchorage and accessory items.
 - 1. Include a schedule of doors and frames using the same reference numbers for details and openings as those shown on the Contract Drawings.
- B. Product Data: Manufacturer's catalog sheets, specifications, and installation instructions.
- C. Samples:
 - 1. Frames: Corner sample of each type, 18 x 18 inches, with mortises and reinforcements, shop primed.
 - 2. Doors: Corner sample of each type showing construction, 18 x 18 inches, with mortises and reinforcements, shop primed.

1.03 QUALITY ASSURANCE

- A. Fire Rated Assemblies: Wherever a fire resistance classification is shown or scheduled for steel doors and frames; provide fire rated units that have been tested as fire door assemblies, and comply with National Fire Protection Association (NFPA) Standard No. 80 and these specifications. Identify each door and frame with a metal UL, FM, or WHI label. Indicate the applicable fire class on the door label. Rivet or weld labels on the hinge edge of door and jamb rabbet of frame. If continuous hinges are specified, rivet or weld labels on the header rabbet of frame and on top exposed edge of door. Locate labels as close to hinge edge as possible.

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1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver doors and frames in heavy paper cartons or other protective packaging.
- B. Store doors and frames on raised platforms in vertical position with blocking between units to allow air circulation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. General Fireproof Door Corp., Bronx, NY 10474
- B. Acme & Dorf Door Corp., Clifton NJ 07011
- C. Ceco Door Products Div., **Milan**, TN **38358**
- D. Acme Steel Door Co., Brooklyn, NY 11222
- E. Curries Company, Mason City, IA 50401
- F. Metalline Fire Door Co., Bronx, NY 10457
- G. Long Island Fireproof Door, Port Washington, NY 11050
- H. Michbi Doors Inc. Brentwood, NY 11717
- I. Or, approved equal.

2.02 MATERIALS

- A. Hot-Rolled Steel Sheets and Strip: Commercial quality carbon steel, pickled and oiled, complying with ASTM A 569 and ASTM A 568.
- B. Cold-Rolled Steel Sheets: Commercial quality carbon steel complying with ASTM A 366 and ASTM A 568.
- C. Galvanized Steel Sheets: Zinc-coated carbon steel sheets of commercial quality complying with ASTM A 526, with A 60 zinc coating, mill phosphatized, complying with ASTM A 525.
- D. Anchors and Supports: Fabricate of not less than 16 gage sheet steel unless otherwise indicated.

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1. Galvanized Units: Galvanize anchors and supports to be used with galvanized frames, complying with ASTM A 153, Class B.
- E. Anchorage Devices, Bolts, and Other Fasteners: Manufacturer's standard units unless otherwise indicated.
1. Galvanized Units: Galvanize items to be used with galvanized frames complying with ASTM A 153, Class C or D as applicable.

2.03 DOORS

A. General:

1. Design and Thickness: Flush design doors, seamless, hollow construction, 1-3/4 inches thick.
2. Sound Deadening (ASTM E 90): Minimum Sound Transmission Class (STC) of 25.
3. Door Edges: Bevel lock stile edge of single acting hinged doors 1/8 inch in 2 inches. Double acting doors shall have rounded edges, approximately 2-1/4 inch radius. Meeting stiles of pairs of single acting doors shall be "V" beveled, unless otherwise specified or shown.
4. Glazing Stops and Beads: Fixed steel stops, formed integral with door unless otherwise acceptable to the Director, on the outside of exterior doors and on the secure side of interior doors. Removable steel beads, of not less than 20 gage formed sheet or solid bar stock, on the other side of doors secured with machine screws; form corners with butted hairline joints. Coordinate width of rabbet between fixed stop and removable bead and depth of rabbet with type of glass and glazing required.
5. Astragals: Steel, attached with machine screws unless shown otherwise.

B. Exterior Doors:

1. Fabricate exterior doors with 2 outer stretcher-leveled, galvanized steel sheets not less than 16 gage. Construct doors with smooth, flush surfaces without visible joints or seams on exposed faces or stile edges, except around glass and louver panels. Vertical edges may be continuously MIG or ARC welded and ground smooth, or intermittent welded 2 inches oc and body filled and dressed to achieve a seamless edge.
2. Reinforce inside of doors with one of the following:

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- a. Vertical, full door height, channel-shaped or hat-shaped or interlocking z-shaped sheet steel sections of not less than 20 gage thickness. Space the reinforcing sections on not more than 6 inch centers and spot weld on 4 inch centers to both face sheets.
 - b. Roll-formed 18 gage sheet steel reinforcing, 4 vertical and a minimum of 8 horizontal members, double projection welded to both face sheets on not more than 6 inch centers.
 - c. Continuous truss-form inner core of 28 gage sheet steel reinforcing. Spot weld on 3 inch centers, vertically and horizontally, to both face sheets.
 - d. Phenolic resin impregnated kraft paper, single piece core of one inch hexagonal cells, securely bonded to both face sheets with waterproof adhesive.
3. Reinforce top and bottom of doors with 16 gage horizontal steel channel welded to the outer sheets. Close top and bottom edges with flush steel weather seal. Weather seal may be an integral part of door construction, or formed by addition of another steel channel or filler plate welded to the door.
 4. Insulate doors to achieve a maximum coefficient of thermal transmittance (apparent "U" Factor) of 0.40.
- C. Interior Doors:
1. Fabricate interior doors with 2 outer stretcher-leveled, cold-rolled steel sheets not less than 14, 16, or 18 gage. Construct doors with smooth, flush surfaces without visible joints or seams on exposed faces or stile edges, except around glass and louver panels. Continuously MIG, ARC or laser weld and ground smooth vertical edges to achieve a seamless edge.
 - a. Fabricate interior doors with 2 outer galvanized steel sheets in high humidity spaces where shown.
 2. Reinforce inside of doors with one of the following:
 - a. Vertical, full door height, channel-shaped or hat-shaped or interlocking z-shaped sheet steel sections of not less than 20 gage thickness. Space the reinforcing sections on not more than 6 inch centers and spot weld on 4 inch centers to both face sheets.

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- b. Roll-formed 18 gage sheet steel reinforcing, 4 vertical and a minimum of 8 horizontal members, double projection welded to both face sheets on not more than 6 inch centers.
 - c. Continuous truss-form inner core of 28 gage sheet steel reinforcing. Spot weld on 3 inch centers, vertically and horizontally, to both face sheets.
 - d. Phenolic resin impregnated kraft paper, single piece core of one inch hexagonal cells, securely bonded to both face sheets with waterproof adhesive.
3. Reinforce top and bottom of doors with not less than 18 gage horizontal steel channel welded to the outer sheets.
- a. Close top and bottom edges with flush steel cap. Cap may be an integral part of door construction, or formed by addition of another steel channel or filler plate welded to the door.

2.04 FRAMES

- A. General:
1. Furnish steel frames for doors, transoms, sidelites, borrowed lites, and other openings wherever shown, of size and profile as specified or shown.
 2. Construction: Full-welded unit construction, with corners mitered and continuously welded full depth and width of frame, unless otherwise specified or shown. Knock-down type frames will not be accepted.
 - a. Fixed Stops: Integral 5/8 inch stop unless otherwise shown.
 - b. Removable Beads: Removable steel beads secured with machine screws. Form corners with butted hairline joints.
 - c. Prepare door frames for silencers as required.
 - d. Do not drill frames for silencers.
- B. Exterior Frames: Form exterior frames of galvanized steel sheets, not less than 12, 14, or 16 gage for openings up to 4 feet wide, and not less than 12 gage for larger openings.
- C. Interior Frames: Form interior frames of either hot-rolled or cold-rolled steel sheets, not less than 12,

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- 14, or 16 gage for openings up to 4 feet wide, and not less than 12, or 14 gage for larger openings.
1. Form interior frames of galvanized steel sheets in high humidity spaces where shown.
 2. Terminated Stops: Terminate 6 inches above floor, cut at 45 degree angle, and close bottom of stop with a metal filler plate welded in place.
- D. Wall Anchors: Unless otherwise specified or shown, formed of not less than 16 gage steel, and galvanized when used with galvanized frames.
1. Masonry Construction: Adjustable, corrugated or perforated T-shaped to suit frame size with leg not less than 2 inches wide by 10 inches long. Furnish at least 3 anchors per jamb up to 7'-6" jamb height; 4 anchors per jamb to 8 foot jamb height; one additional anchor per jamb for each 24 inches or fraction thereof over 8 feet high.
 2. Steel Stud Construction: Weld-in type welded to back of frame unless otherwise indicated or approved. Furnish at least 4 anchors per jamb up to 7'-6" jamb height; 5 anchors per jamb to 8 foot jamb height; one additional anchor per jamb for each 24 inches or fraction thereof over 8 feet high.
 3. Anchors for Completed Openings: Anchorage devices designed to secure frame to in-place concrete or in-place masonry construction, as applicable. Furnish at least 5 anchors per jamb up to 7'-6" jamb height; 6 anchors per jamb to 8 foot jamb height; one additional anchor per jamb for each 12 inches or fraction thereof over 8 feet high.
- F. Floor Anchors: Furnish floor anchor for each jamb and mullion which extends to floor, formed of not less than 16 gage steel, with 2 holes to receive fasteners, welded to bottom of jamb or mullion, and galvanized if used with galvanized frames.
- G. Head Anchors: Furnish 2 anchors at head of frames exceeding 42 inches wide for frames mounted in steel stud walls. Frame manufacturer's standard head anchor unless otherwise shown.
- H. Structural Reinforcing Members: Furnish structural reinforcing members, as a part of frame assembly, where indicated at mullions, transoms, and other locations.
- I. Shipping Bars: Removable spreader bar across bottom of frames, tack welded to jambs and mullions.

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- J. Mortar Guards: 26 gage steel mortar or plaster guards, welded to frame, at back of finish hardware cutouts where mortar or other materials might obstruct hardware operation.

2.05 FRAMES FOR COMPLETED OPENINGS

- A. Where shown, furnish frames consisting of rough buck and slip (finish) buck.
1. Galvanize members of exterior frames.
- B. Rough Buck: Furnish rough buck at the jambs only, consisting of a channel with one leg approximately 3/4 inch, the other approximately 1-1/2 inches, and with a 12 gage stiffening clip at hinge reinforcing.
1. Use 12 gage steel for exterior frames.
 2. Use 14 gage steel for interior frames.
 3. Anchors:
 - a. 3/8 inch dia machine bolts with metal expansion shields for concrete and solid masonry.
 - b. 3/8 inch dia toggle bolts for hollow portions of masonry.
 - c. Unless otherwise shown, furnish at least 5 anchors per jamb up to 7'-6" jamb height; 6 anchors per jamb to 8 foot jamb height; one additional anchor per jamb for each 12 inches or fraction thereof over 8 feet high.
- C. Finish Buck: Furnish a slip buck with mitered corners welded and ground smooth.
1. Use 14 gage steel for exterior frames.
 2. Use 16 gage steel for interior frames.

2.06 PANELS

- A. Furnish panel units as indicated.
1. Fabricate exterior panels same as specified for exterior doors.
 2. Fabricate interior panels same as specified for interior doors.

2.07 LOUVERS

- A. Except for fire rated louvers, fabricate louvers to mount flush into doors without overlapping moldings on surface of door-facing sheets. Provide internal support as recommended by louver manufacturer.

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- B. Interior Louvers: Sightproof, stationary type, constructed of inverted "Y" shaped blades formed of 18 gage cold-rolled steel. Space blades to provide not less than 30 percent free air opening.
- C. Fire Rated Louvers: Listed, fusible link, self-closing fire door type.

2.08 FABRICATION

- A. Fabricate steel door and frame units to be rigid, neat in appearance, and free from warp, buckle and other defects. Accurately form metal to required sizes and profiles. Weld exposed joints, and make smooth, flush and invisible by filling or grinding and dressing. Wherever practicable, fit and assemble units in the manufacturer's plant. Clearly identify items that cannot be permanently factory-assembled before shipment, to assure proper assembly at the project site.
- B. Exposed Fasteners: Countersunk, flat or oval Phillips head for exposed screws and bolts. Unless otherwise specified or shown, locate fasteners 2 inches from each end of members and not more than 12 inches apart.
- C. Exposed Fasteners: Countersunk flat tamper-resistant head for exposed screws and bolts. Unless otherwise specified or shown, locate fasteners 2 inches from each end of members and not more than 12 inches apart.
- D. Finish Hardware Preparation:
 - 1. Prepare doors and frames to receive mortised and concealed finish hardware, including cutouts, reinforcing, drilling and tapping, in accordance with Finish Hardware Schedule and templates furnished by hardware manufacturer.
 - 2. Reinforce doors and frames to receive surface applied hardware. Drilling and tapping for this hardware shall be done at the project site.
 - 3. Locate finish hardware as specified elsewhere or as shown on the hardware manufacturer's templates.
 - 4. Weld 14 gage steel tongues, 1-1/2 inches high, inside lock mortise to keep lock body centered in door.
 - 5. Install 7 gage reinforcement for hinges and pivots, except hinge reinforcement in door edge may be a one-piece 12 gage channel full door height with extruded hinge screw holes having an average minimum thread pull-out strength of 1600

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- pounds per hole. Install 12 gage reinforcement for all other hardware.
6. Reinforce doors not mortised for concealed door closers for surface door closer application, and all frames for closer arm application, whether or not closers are specified.
- E. Clearances: Fabricate doors for their respective frames within the following clearances:
1. Jambs and Head: 3/32 to 1/8 inch.
 2. Meeting Edges of Pairs: 1/8 to 1/4 inch.
 3. Bottom (no threshold or carpet): 3/4 inch, maximum to finished surface.
 4. Bottom (at threshold or carpet): 3/8 inch, maximum to top of threshold or carpet.
 5. Fire Rated Doors: Comply with clearances specified in NFPA Standard No. 80.
- F. Shop Painting:
1. Chemically wash, rinse, and dry exposed and concealed surfaces of fabricated units.
 2. Apply one coat of primer to all surfaces and oven-bake units.
 3. Units shall be capable of passing the following tests:
 - a. Salt Spray Test complying with ASTM B 117 for 120 continuous hours.
 - b. Water Fog Test complying with ASTM D 1735 for 240 continuous hours.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions: Examine the substrate and conditions under which the frames are to be installed for defects that will adversely affect the execution and quality of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. Install steel doors, frames, and accessories in accordance with the manufacturer's printed instructions, except as otherwise specified or shown.
- B. Frame Installation: Place frames accurately in position; plumb, align, and brace securely until permanent anchors are set. After wall construction is

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complete, remove temporary braces and spreader bars, leaving surfaces smooth and undamaged.

1. Floor anchors may be set with powder-actuated fasteners instead of anchorage devices and machine screws, if so approved on final shop drawings.
2. Place fire rated frames in accordance with NFPA Standard No. 80.
3. Make necessary field splices in frames as detailed on final shop drawings, welded and finished to match factory fabrication.
4. Placing Frames For Completed Openings: Secure to in-place concrete and in-place masonry construction with anchorage devices. Set anchorage device opposite each anchor location in accordance with details on final shop drawings and anchorage device manufacturer's instructions. Leave drilled holes rough, not reamed, and free from dust and debris.

C. Door Installation:

1. Install doors accurately in their respective frames within the clearances specified in Part 2.
2. Place fire rated doors with clearances as specified in NFPA Standard No. 80.

- D.** Drill and tap doors and frames to receive surface applied hardware.

3.03 ADJUSTING

- A.** Prime Coat Touch-up: Immediately after installation, sand smooth and clean rusted and damaged areas of shop prime coat and apply touch-up of compatible air-drying primer.
- B.** Final Adjustments: Check and readjust operating finish hardware items just prior to final inspection. Leave Work in complete and proper operating condition.

3.04 CLEANING

- A:** Clean doors, frames, and accessories free of dirt and other foreign materials after completion of installation.

END OF SECTION

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SECTION 081116
ALUMINUM DOORS AND FRAMES

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Finish Hardware and Thresholds: Section 087100.
- B. Glass and Glazing: Section 088100.

1.02 SUBMITTALS

- A. Shop Drawings: Show details of each frame type, elevation and construction for each door type, conditions at openings, location and installation requirements for finish hardware (including cutouts and reinforcements), details of connections, and anchorage and accessory items.
- B. Product Data: Catalog sheets, specifications, and installation instructions for each type door and frame specified.
- C. Samples:
 - 1. Frames: Corner sample of each type, 18 x 18 inches, with mortises, reinforcements, and specified finish.
 - 2. Doors: Corner sample of each type showing construction, 18 x 18 inches, with mortises, reinforcements, and specified finish.
 - 3. Color Samples: Manufacturer's standard colors showing maximum variation of each color. Submit actual production sections large enough to establish the allowable color shade range.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Aluminum:
 - 1. Extruded Shapes: 6063 alloy, T5 temper.
 - 2. Sheet, and Shapes Formed of Sheet: 1100 alloy, H14 temper.
 - 3. Color Anodized Aluminum: 5005 alloy of temper for required shapes.

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- B. Steel Subframes: ASTM A 36 plates, shapes and bars.
- C. Reinforcement: Manufacturer's standard formed or fabricated steel units, of shapes, plates or bars; galvanized after reinforcement fabrication, ASTM A 123.
- D. Inserts: Cast iron, malleable iron, 12 gage galvanized steel, ASTM A 153, for required anchorage to concrete or masonry Work.
- E. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and equal to four times the load imposed when installed in concrete, as determined by testing per ASTM E 488, conducted by a qualified independent test agency.
 - a. Carbon Steel: Zinc-Plated; ASTM B 633, Class Fe/Zn 5.
 - b. Stainless Steel: Bolts, Alloy Group 1 or 2; ASTM F593, Nuts; ASTM F 594.
- F. Machine Screws for Steel Subframes: ASME B18.6.3.
- G. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.
- H. Compression Weatherstripping: Replaceable stripping of either molded neoprene gaskets complying with ASTM D 2000, Designation 2BC415 to 3BC620, or molded PVC gaskets complying with ASTM D 2287.
- I. Sliding Weatherstripping: Replaceable stripping of wool, polypropylene or nylon woven pile, with nylon fabric and aluminum strip backing, complying with AAMA 701.1.
- J. Sealants and Gaskets: Manufacturer's standard for the fabrication, assembly and installation of the Work; guaranteed by the manufacturer to remain permanently elastic, non-shrinking, non-migrating and weatherproof.
- K. Glazing Gaskets: Stripping of molded neoprene complying with ASTM D 2000, Designation 2BC415 to

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3BC620, or molded PVC complying with ASTM D 2287, or molded closed-cell neoprene complying with ASTM C 509, Type II, for glazing factory-installed glass and panels, and for gaskets which are factory-installed in a "captive" assembly of glazing stops.

2.02 FABRICATION

- A. Frames:
1. Fabricate door frames of formed or extruded aluminum not less than 0.125 inch thick.
 2. Door Stops: Manufacturer's standard integral extruded shapes.
 3. Glazing Beads: Manufacturer's standard integral extruded shapes.
 4. Subframes: Fabricate subframe assemblies and accessories, as shown, of materials specified herein.
- B. Glazed Doors:
1. Fabricate stiles and rails of extruded aluminum tubular shapes, 1/8 inch min wall thickness, not less than 3 inches wide. Attach extrusions together by means of concealed mechanical fasteners and concealed welding.
 2. Glazing Beads: Manufacturer's standard extruded shapes.
 3. Door Edges: Lock stile edge of single acting doors shall be beveled 1/8 inch in 2 inches. Double acting doors shall have 4 inch radius rounded edges. Meeting stile edges of pairs of single acting doors shall be "V" beveled or rounded, as indicated.
- C. Flush Doors: Fabricate doors with continuous, flush, unbroken surfaces without visible seams.
1. Inner Construction: Heavy extruded stiles and rails joined by welding, by steel tie rods, or both.
 2. Core: Additional extruded tubing, foamed-in-place urethane foam, or phenolic resin honeycomb.
 3. Face Sheets: Minimum .081 inch fastened directly to core, or minimum .040 inch laminated to 1/8 inch tempered hardboard, smooth aluminum sheet.

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4. Glass Frames: Manufacturer's standard extruded channel, continuous around opening, with formed or extruded glazing beads.
 5. Door Edges: Lock stile edge of single acting doors shall be beveled 1/8 inch in 2 inches. Double acting doors shall have 4 inch radius rounded edges. Meeting stile edges of pairs of single acting doors shall be "V" bevel.
- D. Aluminum Tempered Glass Doors: Manufacturer's standard aluminum top and bottom rail or corner assemblies permanently fastened to 1 inch tempered float glass.
- E. Finish Hardware Preparation: Attach concealed reinforcements and cut mortises of sizes required and where located by the approved hardware schedule, for the proper installation of finish hardware.
1. Reinforcements: 1/4 inch thick aluminum.
 2. Install reinforcements within mortises at the depths required to bring the hardware surfaces flush with the door and jamb surfaces.
 3. Extend reinforcements for hinges, pivots, floor hinges, 4 inches above and below mortises on side jambs and door edges.
 4. Reinforce all doors not mortised for concealed door closers on both sides for surface door closer application; and all frames on both sides for closer arm application.

2.03 FINISHES

- A. Preparation: After fabrication of doors and frames, but before lamination of panels (if any), prepare the aluminum surfaces for finishing in accordance with the Aluminum Association recommendations and standards. Process all components of each assembly simultaneously to attain complete uniformity of color.
- B. Finish exposed aluminum door and frame components as follows:
1. Natural Anodized Finish: NAAMM AA-M21C22A41, (minimum thickness of 0.7 mils), natural aluminum color.

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PART 3 EXECUTION

3.01 INSTALLATION

- A. Securely anchor sub-framing to supporting structures, plumb and level and properly prepared to receive aluminum doors and frames.
- B. Protect areas of frames and panels to be in contact with sealants and surfaces of glazing rebates and glazing beads with protective, strippable tape. Do not apply lacquer to such areas. Remove tape immediately before application of caulking or glazing compound.
- C. Paint aluminum surfaces in contact with masonry and incompatible metals with bituminous paint.
- D. Door Installation: Fit doors accurately in their frames, with the following clearances:
 - 1. Jams and Head: 3/32 inch.
 - 2. Bottom; no Threshold: 3/8 inch.
 - 3. Bottom, at Threshold: 1/8 inch.

3.02 PROTECTION

- A. Provide protective covering to protect aluminum doors and frames from damage or defacement after erection.

3.03 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating finish hardware items just prior to final inspection. Leave Work in complete and proper operating condition.
- B. When directed, or just prior to final inspection remove protective coverings and clean aluminum surfaces with products specifically formulated for aluminum and known to be compatible with finishes specified herein.

END OF SECTION

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SECTION 085123
STEEL WINDOWS

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Joint Sealers: Section 079200.
- B. Glass and Glazing: Section 088100.
- C. Painting: Section 099000.

1.02 REFERENCES

- A. Except as shown or specified otherwise, the Work of this Section shall conform to the requirements of the "Steel Window Specifications" of the Steel Window Institute (SWI).

1.03 DESCRIPTION

- A. Window Classification and Weight:
 - 1. Standard Intermediate.

1.04 SUBMITTALS

- A. Shop Drawings: Show fabrication details and connections to adjacent construction.
- B. Product Data: Catalog sheets, specifications, and installation instructions for each type of window unit.
- C. Quality Control Submittals:
 - 1. Test Reports: Certified air infiltration, water penetration, and structural performance test reports for each type of window unit required.
- E. Contract Closeout Submittals:
 - 1. Operation and Maintenance Data: Deliver 2 copies, covering the installed products, including instructions for cleaning and touching-up finish, to the Director's Representative.

1.05 QUALITY ASSURANCE

- A. Testing Agency:

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1. Air infiltration, water penetration, and structural performance tests shall be performed by a qualified independent testing laboratory.
2. Fire rated windows shall be labeled by Factory Mutual System, Underwriters Laboratories Inc., or other nationally recognized testing laboratory.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver windows in sturdy, protective crates or containers.
- B. Store and handle windows in a manner that will not cause damage to the finish.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Windows and Frames: Solid steel shapes made from new billet steel.
 1. Mullions: Solid steel shapes or plates with sheet steel covers, unless otherwise shown.
- B. Glazing Beads: Unless otherwise shown or specified, extruded aluminum, 6063 alloy T5 temper, with a minimum thickness of 0.06 inch; continuous snap-on type.
 1. Fire-Rated Windows: Formed steel glazing beads, screw-on type.
 2. Finish: Finish shall match windows.
- C. Accessories:
 1. Anchors: Anchors, clips, fittings, and related fasteners shall be galvanized or cadmium plated steel, unless otherwise approved.
 2. Window Cleaning Anchors: Non-magnetic stainless steel or nickel-copper alloy; ANSI A39.1.
- D. Sealing Mastic: Non-staining sealant material recommended by window manufacturer.

2.02 FABRICATION

- A. Ventilator sections shall be hot rolled with integral flanges providing parallel double contact surfaces around perimeter of each ventilator.
- B. Corners of frames and ventilators shall be mitered or coped and solidly welded. Exposed and contact

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surfaces shall be finished smooth flush with adjacent surfaces.

- C. Glazing: Windows shall be fabricated for inside glazing with glazing beads. Glazing beads shall be sized to suit the glass specified.
- D. Tolerance for Window Size (height and width)
Dimensions: + 1/16 inch.
- E. Anchor Accessories: Fabricate to shape and size, and furnish in quantity, as required to securely install and connect the Work of this Section to the construction shown.
- F. Hardware: Unless otherwise shown or specified, window manufacturer's standard hardware series produced for use with the particular type of window, location, and screen condition.
- G. Fixed Window Units: Non-operable units of design and profile shown.
- H. Fire Rated Windows: Heavy intermediate units labeled for 3/4 hour fire rating (ASTM E 163), and complying with NFPA Standard No. 80.
 - 1. Glazing: Fabricated for inside glazing with continuous steel glazing beads.

2.03 SHOP FINISHES

- A. Galvanizing: Steel window surfaces, except ventilators, shall be cleaned, pickled, fluxed, and hot-dip galvanized in accordance with ASTM A 123.
 - 1. Ventilator surfaces shall be cleaned, pickled and electro-galvanized in accordance with ASTM B 633, Classification Fe/Zn 25.
- B. Prime Coat Finish: Steel window surfaces shall receive zinc phosphate treatment in a 5 stage process and one coat of baked-on epoxy primer with a minimum 1 mil dry film thickness.
- C. Acrylic/Polyester Enamel Factory Finish: Steel window surfaces shall receive zinc phosphate treatment in a 5 stage process, one coat of baked-on epoxy primer, followed by an oven baked coat of acrylic or polyester enamel.
 - 1. Color: Selected from window manufacturer's standard colors.

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PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine surfaces to receive steel windows for defects that will adversely affect the execution and quality of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. Install the Work of this Section in accordance with the manufacturer's printed instructions, except as shown or specified otherwise.
- B. Anchor window units securely in place, plumb, level, aligned, without warp.
- C. Seal metal to metal joints, screw heads, and unneeded fastener holes with sealing mastic.

3.03 ADJUSTING AND CLEANING

- A. Adjust ventilators and hardware for smooth operation and weathertight closure. Lubricate hardware and other moving parts.
- B. Clean window units promptly after completion of installation

END OF SECTION

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SECTION 087100
FINISH HARDWARE

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Steel Doors and Frames: Section 081102.

1.02 REFERENCES

- A. Materials and Finishes Standard: ANSI/BHMA A156.18-2006, "American National Standard for Materials and Finishes".

1.03 DEFINITIONS

- A. Company Field Advisor(s): Hardware manufacturers' representatives who are certified in writing by manufacturer to be technically qualified in design, installation, operation, inspection, and servicing of products.

1.04 SUBMITTALS

- A. Submittal Packages:
1. Submit the Quality Assurance Package prior to other submittal packages. After Quality Assurance Package is approved, submit the Samples if required, and finally the Packages listed below:
 2. Submit the Finish Hardware Schedule, and Product Data, specified below at the same time as a package. Partial submittal will not be approved.
- B. Finish Hardware Schedule: Use vertical format, horizontal format not acceptable. Include all Finish Hardware to complete the Work.
- C. Contract Close Out Submittals: Turn over to the Commissioner immediately following the Post Installation Inspection.
1. Operation and Maintenance Manuals:
 - a. Furnish 2 copies.
 - b. Manufacturers' operation, installation, maintenance and repair instructions,

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- and templates, for each type of hardware provided.
- c. Parts List for each type of finish hardware provided.
 - d. Manufacturers' written warranties for each type of finish hardware.
2. Certification: Written certification from Company Field Advisor(s) or Installation Supervisor that the products are installed according to manufacturers' recommendations, are operating properly. Manufacturers' written warranty will be in effect upon physical completion of the Work.
3. Maintenance Materials.

1.05 QUALITY ASSURANCE

- A. Uniformity of Hardware and Single Source Responsibility: Provide each kind of hardware (door closers, locks, hinges, etc.) from the same manufacturer.
- B. Size Variations: Manufactures' products may vary slightly from sizes specified except where a minimum size or thickness is specified. Variations shall not prevent the product from performing the intended use.
- C. Installation Supervisor: Employ a qualified installation supervisor who will be responsible to ensure approved finish hardware is installed, adjusted, and operating properly.

1.06 TEMPLATES

- A. After receipt of approved submittals, furnish templates to affected trades, to enable fabricators to make provision for finish hardware without delaying Project progress.

1.07 DELIVERY AND STORAGE

- A. Coordinate delivery to avoid delay.
- B. Package hardware with fasteners, parts, instructions, and templates.

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- C. Clearly label each item for identification and installation location according to approved Finish Hardware Schedule.
- D. Provide locked, dry storage for Finish Hardware at a location acceptable to Commissioner.

1.08 Tools

- A. Hand Tool Maintenance Kit: Lockable steel tool box containing one set of all hand tools necessary to perform preventative maintenance and repairs to the Hardware. Include:
 - 1. One complete Torx kit and driver.
 - 2. Six special Hex wrenches for door closer adjustment.
 - 3. Provide manufacturer's recommended lubricants for hinges, locksets, exit devices, and closers etc. sufficient for 3 years of maintenance.
 - 4. Turn Kit over to the Facility through the Commissioner.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Butts

- 1. Stanley
- 2. McKinney
- 3. Hager
- 4. Bommer
- 5. Lawrence

B. Continuous Hinges

- 1. Markar
- 2. McKinney
- 3. Ives

- C. Locksets, Passage Sets (Lever Type) (Double cylinder is required for the intruder function.)

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1. Yale SL 8800 FL Series mortise lock with JLxCN Jefferson Lever trim in satin stainless steel finish (BHMA 630). Model 8818-2 for room security intruder with visual indicator.
2. Sargent 8200 Series mortise lock with LW1B trim in satin stainless steel finish (BHMA 630). Model 49-8238 for room security intruder with visual indicator
3. Schlage L9000 Series mortise lock with 07 lever and N escutcheon. Provide classroom security function with XL12-751 Security Indicator, in satin stainless steel finish (BHMA 630).
4. Marks BE101 5000-BL Series BHMA 630 finish.
5. Best Access Systems 45H series mortise lock with 15J trim BHMA 630 finish. INL-Intruder for classroom intruder function with visual indicator.
6. Corbin Russwin ML2002 for room intruder function with visual indicator.

D. Rim Latch

1. Yale
2. Segal

E. Cylinders

1. Sargent
2. Corbin Russwin
3. Schlage
4. Marks
5. Yale
6. Falcon

F. Exit Devices

1. Von Duprin 99 Series
2. Precision APEX 2100 and 2200 Series

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3. Sargent 8700 and 8800 Series
4. Falcon 25 Series
5. Yale 7100 Series

G. Pulls

1. Rockwood
2. Ives

H. Push Plates

1. Rockwood
2. Ives

I. Door Closers (non-ADA)

1. LCN
2. Norton
3. Sargent
4. Yale
5. Dorma

J. Door Closers (for-ADA)

1. LCN 1461 DEL
2. Norton 8501 BF DA
3. Dorma 8616AF86P by FCOB
4. Yale 3501 BF DA

K. Stop and Holder

1. Glynn Johnson (81 Series)
2. Architectural Builders Hardware (HD8000 Series)
3. Rixson (Heavy-Duty 8HD Series)

L. Electro-Magnetic Door Holder/Closer

1. Rixson
2. LCN

M. Surface Bolts

1. Ives
2. Rockwood
3. Securitech

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- N. Flush Bolts
 - 1. Ives
 - 2. Rockwood
 - 3. Glynn Johnson

- O. Mortise Privacy Door Bolt
 - 1. Ives
 - 2. Sargent

- P. Security Locks
 - 1. Sargent
 - 2. Yale
 - 3. Securitech
 - 4. Secur-A-Door, Inc.

- Q. Cardholders
 - 1. Rockwood

- R. Kick plates
 - 1. Ives
 - 2. Rockwood

- S. Silencers
 - 1. Ives
 - 2. Rockwood

2.02 FASTENINGS

- A. Provide appropriate fasteners that harmonize with the material and finish.

- B. Provide Torx center pin security fasteners for exposed items of hardware, including full mortise hinges. Use non-removable pin or hospital tip on all hinges.

- C. Provide Torx center pin security fasteners for hardware to be secured to metal; self-tapping screws are not acceptable. Provide Torx security head machine screws and metal expansion shields for attachment to masonry substrates.

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- D. Provide undercut (shallow head) Torx center pin security fasteners where necessary for proper seating.
- E. Provide sex bolts for door closers and overhead stop and holders.

2.03 ACCESSORIES, BRACKETS AND PLATES

- A. Strikes are to fit individual lockset function. Universal or generic strikes that fit a variety of lockset functions are not acceptable. Furnish curved lip strikes with wrought boxes.
- B. Provide compression rings and spacers as required, to achieve proper spacing relationship between cylinder and face of door.
- C. Provide brackets, plates, and special templates to mount door closers in combination with overhead stops and holders, on narrow top rails, transom mountings, and for special ceiling and jamb conditions.
- D. Provide filler plates at existing hinge and strike mortises as required.

2.04 FINISH HARDWARE

- A. Provide hardware for each door, each pair of doors, and each set of doors, in compliance with "Hardware Set Numbers" indicated in Door Schedule on Drawings, and as specified herein.

Manufacturer's names and product designations for hardware types are listed for the purpose of establishing minimum requirements.

<u>Item</u>	<u>Quantity</u>	<u>Mfr. & Cat. No.</u>
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SET 1		
Exterior Doors (Entrance)		Base of Design
Aluminum Door:		
Continuous Hinge		Markar FM 300
Exit Device	1	Precision 2103 x 1703A

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		(with rim cylinder)
Surface mounted or concealed Door Closer	1	LCN 4040 mounted with Extra Duty Arm 4040-3077EDA or LCN 2015 (concealed)
Overhead Stop with Holder	1	Glynn-Johnson 81 Series
		Or approved equal.
SET 2 Vestibule Doors		
Butts	1-1/2 Pair 5" x 4-1/2"	McKinney TA792
Pulls	1	Rockwood 130
Push Plate	1	Rockwood 71C
Surface Mounted Door Closer	1	LCN 4040 with Extra Duty Arm 4040-3077EDA with through bolts
Overhead Stop without Holder	1	Glynn Johnson 81 Series
Silencers	3	Ives SR64
		Or approved equal.

SET 3 Store Rooms		
Butts	1-1/2 pair 4-1/2"x4-1/2"	McKinney TB2714
Rim Latch	1	Yale 80
Surface Mounted Door Closer	1	LCN 4010
Pull	1	Rockwood 130
Push Plate	1	Rockwood 71C
Smoke seal		Pemko S44D
		Or approved equal.

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SET 4 Elevator Machine Room		
Butts	1-1/2 Pair 4-1/2"x4-1/2"	McKinney TB2714
Lockset		Sargent 8204 LW1B
Surface Mounted Door Closer	1	LCN 4014
Overhead Stop without Holder	1	Glynn Johnson 81 Series
Smoke seal		Pemko S44D
		Or approved equal.
SET 5 Rooms of Instruction		
Butts	1-1/2 pair 4-1/2"x4-1/2"	McKinney TA2714
Lockset	1	Sargent 8237 LW1B
Surface Mounted Door Closer	1	LCN 1461 DEL
Overhead Stop without Holder	1	Glynn Johnson 81 Series
Silencers	3	Ives SR64
Card Holder	1	Rockwood 651
Kick Plate	1	Ives 8400-S32D-B4E
		Or approved equal.
SET 6 Private Toilets (Without Compartments)		

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Butts	1-1/2 pair 4-1/2"x4-1/2"	McKinney TB2714
Lockset	1	Sargent 8250 LW1B
Surface Mounted Door Closer	1	LCN 1461 DEL
Overhead Stop without Holder	1	Glynn Johnson 81 Series
Silencers	3	Ives SR64
Kick Plate	1	Ives 8400-S32D-B4E Or approved equal.
SET 7		
Staff Toilets (With Privacy Compartments)		
Butts	1 pair 4-1/2"x4-1/2"	McKinney TB2714
Lockset	1	Sargent 8204 LW1B
Surface Mounted Door Closer	1	LCN 1461 DEL
Overhead Stop without Holder	1	Glynn Johnson 81 Series
Silencers	3	Ives SR64
Kick Plate	1	Ives 8400-S32D-B4E Or approved equal

2.05 KEY CONTROL SYSTEM

- A. Furnish a complete set up system with brass permanent file key tags, detachable fiber key tags, cross index cards, borrower's receipt forms, brass receipt holders, and parts and instruction manual. Keys to be stored on swinging panels within steel, wall hung, locked cabinet, or with in steel, standard metal cabinet with capacity for 150% of the number of commercial cylinders required for this Project.
1. Provide a complete cross-index system set up by key control manufacturer. Place keys on markers and hooks in the cabinet as determined by the final keying schedule.

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2.06 KEYING

- A. Obtain keying information from the Facility through the Commissioner.
- B. Furnish uncombined cylinders compatible with the existing system, with sufficient springs, cores, caps, drivers, and pin segments for combination by the Facility.
- C. If locksets and cylinders are from different manufacturers, identify and furnish the correct cams required to install the cylinder.
- D. Key locks as follows and incorporate keying schedule in the hardware schedule for approval.
 - 1. Keying shall be done by the lock company and establish factory records of key changes.
 - a. Furnish the Facility with a complete bitting list.
 - 2. All cylinders shall be construction master keyed. Provide manufacturer's special pin tumbler cylinders that permit voiding construction keys without removal of the cylinder. Furnish 6 Construction Master Keys total.
 - 3. Visual Key Control: Stamp permanent keys and cylinders with the applicable key mark for identification and "Do Not Duplicate." Do not use cut numbers.
 - 6. Ship only permanent master keys via United States Postal Service, Registered Mail, Return Receipt Requested, direct from the lock company, to: O.G.S. Design & Construction, Division of Design, Corning Tower, Empire State Plaza, Albany, NY 12242.
 - a. Ship permanent cylinders and construction keys with the locksets.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install hardware in accordance with the manufacturer's printed instructions, and adjust for smooth operation.

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1. Installation Sequence: Use proper installation sequence e.g., install overhead stops and coordinators before surface mounted door closers.
 2. Template door closers for maximum door swing by wall placement and jamb conditions. Where overhead stop prevents door from swinging to wall, template closer to exceed degree of opening allowed by overhead stop.
- B. Use proper tools and methods to prevent scratches, burrs or other defacement.
- C. After installation, cover hardware with protective cloth or paper to prevent damage during remaining construction. Remove protection upon completion.

3.02 FIELD QUALITY CONTROL

- A. Post Installation Inspection: After the hardware is adjusted for smooth operation a post installation inspection meeting will be held to assure that the hardware is installed and operating properly and to familiarize the Facility Representative with the hardware operation and maintenance. The Contractor, hardware installer, and Company Field Advisor shall attend the meeting. The Commissioner and a Facility Representative will also attend the meeting.
1. Notify the Commissioner at least 3 working days prior to the inspection so arrangements can be made to have a Facility Representative participate in the inspection.
 2. Secure the services of a Company Field Advisor(s) for door closers, mortise locks and latches, cylinder and bit key deadlocks, electric strikes, magnetic switches, magnetic locks, exit devices, overhead stops and holders, flush bolts, coordinators to inspect and certify in writing, that their products are installed and operating properly and that the manufacturer's warranty will be in effect upon physical completion of the Work.

END OF SECTION

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SECTION 088100
GLASS AND GLAZING

PART 1 GENERAL

1.01 REFERENCES

- A. Comply with recommendations in the "Glazing Manual" of the Glass Association of North America and the "Sealant Manual" of the Flat Glass Marketing Association except as shown or specified otherwise, and except as specifically recommended otherwise by the manufacturers of the glass and glazing materials.

- B. Comply with NYC BC, Section 2406 and NYS Department of Labor requirements, Code Rule 47, Transparent Glass Doors in Mercantile Establishments and in Public and Commercial Buildings and Structures, for marking glass.
<http://www.labor.ny.gov/workerprotection/safetyhealth/sh47.shtm>

1.02 SUBMITTALS

- A. Product Data: Manufacturer's specifications and installation instructions for each type of glass and glazing material specified, and spacers and compressible filler rod.

- B. Samples:
 - 1. Glass: 12 x 12 inch pieces for each type of glass specified.
 - a. Insulating glass samples need not be hermetically sealed, but include edge construction materials.

- C. Quality Control Submittals:
 - a. Affidavit required under Quality Assurance Article.
 - b. Wired Glass: Affidavit required under Quality Assurance Article.

1.03 QUALITY ASSURANCE

- A. Compatibility of Materials: All components of the glazing system shall be manufactured or recommended

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by one manufacturer to assure the compatibility of materials.

- B. Safety Glazing Material: Type indicated, meeting requirements of ANSI Z97.1 with label on each piece.
- C. Certification:
 - 1. Affidavit by the material supplier, certifying type and quality of glass furnished.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Protect glass from edge damage during handling, storage, and installation.

1.05 PROJECT CONDITIONS

- A. Environmental Requirements: Comply with glazing materials manufacturer's written recommendations regarding environmental conditions under which glazing materials can be installed.
- B. Glazing channel dimensions shown are intended to provide for necessary minimum bite on the glass, minimum edge clearance and adequate glazing material thicknesses, with reasonable tolerances. Provide correct glass size for each opening, within the tolerances and necessary dimensions required.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers specified in Section 081102 "Steel Doors and Frames". Follow the manufacturer recommendations.

2.02 GLASS

- A. Type D Glass: Tempered Float Glass; ASTM C 1048, Kind FT, Condition A, Type I, Class 1, tempered by the manufacturer's standard process (after cutting to final size).
 - 1. Thickness: 1 inch.
- B. Type G Glass: Clear Fire-Rated Glass (No Wire): Fire Lite distributed.

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1. Surface Condition: Standard (unpolished surfaces).
2. Classification Mark Location: Lower right corner.

2.03 GLAZING MATERIALS

- A. Type 12 Glazing Material: Molded Neoprene Glazing Gaskets; molded or extruded neoprene gaskets of the profile and hardness required for watertight construction; ASTM D 2000 designation 2BC 415 to 3BC 620.
- B. Type 14 Glazing Material: Pure silicone caulk, closed cell PVC tape, or DAP 33 putty as recommended by Technical Glass Products to comply with U.L. Listing.
- C. Colors: For exposed materials provide color as indicated or, if not indicated, as selected by the Director from the manufacturer's standard colors. For concealed materials, provide any of the manufacturer's standard colors.
- D. Setting Blocks: Neoprene, 70-90 durometer hardness, with proven compatibility with sealants used.
- E. Spacers: Neoprene, 40-50 durometer hardness, with proven compatibility with glazing materials used.
- F. Compressible Filler Rod: Closed-cell or waterproof-jacketed rod stock of synthetic rubber or plastic foam, proven to be compatible with glazing materials used, flexible and resilient, with 5-10 psi compression strength for 25 percent deflection.
- G. Cleaners, Primers and Sealers: Type recommended by glazing material manufacturer.

PART 3 EXECUTION

3.01 PREPARATION

- A. Clean the glazing channel, or other framing members to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to the

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substrate. Remove lacquer from metal surfaces wherever elastomeric sealants are used.

- B. Inspect each piece of glass immediately before installation, and eliminate pieces which have observable damage or face imperfections.
- C. Apply primer or sealer to joint surfaces wherever recommended by sealant manufacturer.

3.02 INSTALLATION

- A. Each installation shall withstand normal temperature changes, wind loading, and impact loading (for operating sash and doors) without failure of any kind including loss or breakage of glass, failure of sealants or gaskets to remain watertight and airtight, deterioration of glazing materials and other defects in the Work.
- B. Install glass in accordance with the standards detailed in the "Glazing Manual" of the Glass Association of North America and the "Sealant Manual" of the Flat Glass Marketing Association except as shown and specified otherwise, and except as specifically recommended otherwise by the manufacturers of the glass and glazing materials.
- C. Unify appearance of each series of lights by setting each piece to match others as nearly as possible. Inspect each piece and set with pattern, draw and bow oriented in the same direction as other pieces.
- D. Install glazing materials in accordance with the manufacturer's printed instructions.

3.03 GLAZING

- A. Provide spacers inside and out, and of proper size and spacing, for all glass sizes larger than 50 united inches, except where gaskets are used for glazing. Provide 1/8 inch minimum bite of spacers on glass and use thickness equal to sealant width, except with sealant tape use thickness slightly less than final compressed thickness of tape.
- B. Voids and Filler Rods: Prevent exudation of sealant or compound by forming voids or installing filler

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rods in the channel at the heel of jambs and head (do not leave voids in the sill channels) except as otherwise indicated, depending on light sizes, thickness and type of glass, and complying with manufacturer's recommendations.

- C. Do not cut, seam, nip, or abrade glass which is tempered, heat strengthened, or coated.
- D. Force glazing materials into channel to eliminate voids and to ensure complete "wetting" or bond of glazing material to glass and channel surfaces.
- E. Tool exposed surfaces of glazing sealants and compounds to provide a substantial "wash" away from the glass. Install pressurized tapes and gaskets to protrude slightly out of the channel, so as to eliminate dirt and moisture pockets.
- F. Where wedge-shaped gaskets are driven into one side of the channel to pressurize the sealant or gasket on the opposite side, provide adequate anchorage to ensure that gasket will not "walk" out when subjected to dynamic movement. Anchor gasket to stop with matching ribs, or by proven adhesives, including embedment of gasket tail in cured heel bead.
- G. Gasket Glazing: Miter cut and bond ends together at corners where gaskets are used for channel glazing, so that gaskets will not pull away from corners and result in voids or leaks in the glazing system.

3.04 CURE, PROTECTION AND CLEANING

- A. Cure glazing materials in accordance with manufacturer's printed instructions and recommendations, to obtain high early bond strength, internal cohesive strength, and surface durability.
- B. Mark glazed openings immediately upon installation of glass by attaching crossed streamers to framing. Do not apply markers of any type to surfaces of glass.
- C. Replace glass included in the work which is broken, or otherwise damaged, from the time Work is started at the site until the date of physical completion.
- D. Maintain glass in a reasonably clean condition until date of physical completion.

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1. Clean and trim excess glazing material from the glass and stops or frames promptly after installation.

- E. When directed, or just before the project is turned over to the State, remove dirt and other foreign material and wash and polish glass included in the work on both sides.

3.05 MARKING DECALS

- A. Install two marking decals on each transparent glass door, and on each transparent glass sidelight which is wider than 20 inch between stiles. Locate decals midway between stiles 34 inch and 64 inch above the floorline. Refer to Code Rule 47 for all other marking decal requirements.

END OF SECTION

SECTION 08 91 00

STATIONARY METAL WALL LOUVERS

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Dampers: Section 23 33 13.
- B. Metal Ductwork: Section 23 31 13.
- C. Joint Sealers: Section 07 92 00.

1.02 SUBMITTALS

- A. Shop Drawings: Show fabrication details and connections to adjacent Work.
- B. Product Data: Catalog cuts, specifications, and installation instructions for louver type specified.

1.03 QUALITY ASSURANCE

- A. Louvers shall be rated by AMCA (Air Movement and Control Assoc.).

PART 2 PRODUCTS

2.01 ALUMINUM LOUVERS

- A. Type: Stationary drainable blade extruded louvers, 6 inches deep, of aluminum alloy required for the indicated finish.
 - 1. Drainable blades formed with a drain gutter in each blade, positioned at approximately 37 degree angle and spaced approximately 4-1/2 inch centers.
 - 2. Frames formed with downspouts in each jamb and mullion.
 - 3. Maximum air velocity below point of zero water penetration velocity.
 - 4. Maximum pressure drops:
 - a. 0.13 inch w.c. exhaust louvers.
 - b. 0.09 inch w.c. intake louvers.
- B. Fabrication: Form frames with mitered or coped members, welded or riveted and soldered joints.

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Form ends of blades flat against frame jamb and weld, or rivet and solder blades to frame at each end to ensure watertight joints. Reinforce units with concealed plates, angles, tees or other shapes to form a rigid unit. Fabricate louvers with horizontal and vertical mullions where louver openings exceed 60 inches in any direction. Allow for expansion and contraction.

- C. Finishes: Comply with the Metal Finishes Manual of the National Assoc. of Architectural Metal Manufacturers except as otherwise indicated.
1. Mill finish.
 2. Shop primed, minimum 1 mil thickness.
 3. 70 percent "Kynar 500" finish, color as selected.
 4. Baked enamel, minimum 1 mil thickness, color as selected.
 5. Clear anodized (AA-C22A41).
 6. Color anodized (AA-C22A42), color as selected.
 7. Protect exposed factory finished surfaces prior to shipping.
- D. Sills: Same material and finish as the louvers.

2.02 STEEL LOUVERS

- A. Type: Stationary formed galvanized sheet metal louvers, formed of not less than 20 gage steel.
- B. Fabrication: Form frame with mitered or coped galvanized steel members and with continuously welded or riveted and soldered joints. Set blades at 45 degrees unless otherwise indicated. Form ends of blades flat against frame jamb and weld or rivet and solder joints to ensure that joints will be watertight. Reinforce units with concealed plates, angles, tees or other shapes to form a rigid unit.
- C. Finishes:
1. Factory primed, minimum 1 mil thickness.
 2. 70 percent "Kynar 500", color as selected.
 3. Baked enamel, minimum 1 mil thickness, color as selected.
- D. Sills: Same material and finish as the louvers.

2.03 LOUVER SCREENS

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- A. Fabricate removable screen frames of the same metal and finish as the louvers. Locate screens on the inside face of the louvers, unless otherwise indicated. Secure screens to louver frames with machine screws at each corner and spaced 12 inches oc.
- B. Bird Screens:
 - 1. Galvanized 0.625 steel wire, 1/2 inch mesh.
 - 2. Anodized 0.064 aluminum wire, 1/2 inch mesh.
- C. Insect Screens:
 - 1. Anodized aluminum wire, 18 x 14 mesh.
 - 2. Copper or bronze wire, 18 x 14 mesh.

2.04 BLOCK AND BRICK VENTS

- A. Block/Brick Vents: Extruded or cast aluminum masonry size units, minimum 0.125 inch thick with 1/4 inch structural ribs. Provide aluminum insect screening secured to the interior face of the vent.

2.05 FASTENERS AND ANCHORS

- A. Bolts, Nuts, Lags, Washers, Screws and Anchors: Same material as items being installed unless otherwise indicated; types, gages and lengths to suit unit installation conditions; galvanized steel, aluminum or stainless steel for exterior locations or for items anchored to exterior walls.

2.06 MISCELLANEOUS

- A. Bituminous Paint: SSPC-PAINT 12 (Cold applied asphalt mastic).

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install the Work of this Section in accordance with the manufacturer's printed instructions, except as shown otherwise on the Drawings.
- B. Install units plumb, level and in proper alignment with adjacent construction.
- C. Form tight joints with exposed connections accurately fit together.

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- D. Use concealed anchorages wherever possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to form a weathertight connection.
- E. Where louvers are in contact with concrete, masonry or a dissimilar metal, coat the contacting surface with a heavy coat of bituminous paint.
- F. Clean louvers after installation. Remove dirt, dust, and grime.

END OF SECTION

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SECTION 092116
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 DEFINITIONS

- A. Sheet Steel Gages: US Standard.
- B. Gypsum Board Terminology: ASTM C 11 - Standard Terminology Relating to Gypsum and Related Building Materials and Systems.

1.02 SUBMITTALS

- A. Product Data: Catalog sheets, specifications, and installation instructions for each item specified.

1.03 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer.
- B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Stack gypsum panels flat to prevent sagging.

1.04 PROJECT CONDITIONS

- A. Environmental Requirements: Comply with gypsum board manufacturer's printed temperature and ventilation requirements during application and finishing. Ventilate installation areas to relieve excess moisture.

PART 2 PRODUCTS

2.01 FRAMING

- A. Studs, Tracks, and Furring: ASTM C 645; 20 gage (minimum base metal thickness 0.0179 inch) galvanized steel, with additional framing members, reinforcing, accessories, and anchors necessary for the complete framing system.

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2.02 GYPSUM BOARD

- A. Standard Gypsum Board: ASTM C 1396; long edges as follows:
 - 1. Long Edges: Tapered.

2.03 FASTENERS

- A. Steel Drill Screws: ASTM C 1002; gypsum board manufacturer's recommended types and sizes for substrates involved.
- B. Laminating Adhesive: Gypsum board manufacturer's recommended type for substrates involved.
- C. Expansion Anchors: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563; and, where indicated, flat washers.
- D. Toggle Bolts: Tumble wing type.
 - 1. Wing Body: AISI 1008-1010 or equivalent cold rolled steel.
 - 2. Trunnion Nut: 1/4 inch thru 3/8 inch AISI 1010 steel; 1/2 inch Zamac alloy.
 - 3. Screw: Carbon steel.

2.04 TRIM

- A. Interior Trim: ASTM C 1047.
 - 1. Material: Extruded vinyl.
 - 2. Shapes:
 - a. Cornerbead: Use at outside corners.

2.05 ACCESSORIES

- A. Sound Attenuation Blankets: ASTM C 665, Type 1; semi-rigid, mineral fiber blankets without membrane covering. Furnish blankets of thickness, density, and type tested by the gypsum board manufacturer for the required rating.
- B. Acoustical Sealant for Exposed and Concealed Joints: Nonsag, paintable, nonstaining, latex sealant complying with ASTM C 834 that effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

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2.06 JOINT TREATMENT MATERIALS

- A. Joint Tapes: ASTM C 475; plain or perforated.
- B. Joint Compound: ASTM C 475; gypsum board manufacturer's recommended dry powder or ready-mixed, either of the following:
 - 1. One Compound Treatment: One compound for both bedding and finishing joints.
 - 2. Two Compound Treatment: Compatible joint compounds; one compound for bedding and the other compound for finishing joints.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates to which gypsum board system attaches or abuts, preset steel door frames, cast in anchors, and structural framing, with installer present for compliance with requirements for installation tolerances and other conditions affecting performance of gypsum board system construction. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 CONSTRUCTION TOLERANCES

- A. Do not exceed 1/8 inch in 8 feet variation from plumb or level in any exposed line or surface, except at joints between boards do not exceed 1/16 inch variation between planes or abutting edges or ends. Shim as required to comply with specified tolerances.

3.03 STEEL FRAMING INSTALLATION

- A. Installation Standards: ASTM C 754, and ASTM C 840 requirements that apply to framing installation.
- B. Install supplementary framing, blocking, and bracing at terminations in gypsum board system to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction. Comply with details indicated and with gypsum board manufacturer's written recommendations.

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- C. Isolate partitions from structural elements as indicated to prevent transfer of structural loads or movements to partitions.
- D. Partition Framing Installation:
 - 1. Align tracks accurately at floor. Secure tracks as recommended by the framing manufacturer for the floor construction involved, except do not exceed 24 inches oc spacing for powder-driven fasteners, or 16 inches oc for other types of attachment. Provide fasteners approximately 2 inches from corners and ends of tracks.
 - 2. Position studs vertically and engage both floor and head tracks. Install studs so flanges point in the same direction and leading edge or end of each panel can be attached to open (unsupported) edge of stud flanges first. Space studs 16 inches on center, unless otherwise indicated on the Drawings. Fasten studs to track flanges with screws or by crimping.
 - 3. Install additional studs to support inside corners at partition intersections and corners, and to support outside corners, terminations of partitions.

3.04 ACOUSTICAL ACCESSORIES INSTALLATION

- A. Sound Attenuation Blankets: Install in partitions tight within spaces, around cut openings, behind and around electrical and mechanical items within or behind partitions, and tight to items passing through partitions.
- B. Acoustical Sealant: ASTM C 919; install continuous bead of acoustical sealant at gypsum board perimeter. Seal wherever gypsum board abuts dissimilar materials. Seal spaces between gypsum board and all penetrating items. Seal sides and backs of electrical and mechanical items.

3.05 GYPSUM BOARD INSTALLATION

- A. Install gypsum board in the most economical direction, of maximum lengths to minimize end butt joints. Where unavoidable, locate end butt joints as far from center of walls or ceilings as possible.

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- B. Install gypsum board with face side out. Butt boards together at edges and ends over firm bearing with not more than 1/16 inch of open space between boards. Do not force into place.
- C. Fasteners: Fasten gypsum board to supports and furring with steel drill screws of required size and spacing as recommended by the gypsum board manufacturer.
- D. Provide additional framing and blocking required to support gypsum board at openings.
- E. Wood Supports: Provide "floating" interior angle construction between gypsum board at interior corners.
- F. Reinforce joints formed by tapered edges, butt edges, and interior corners or angles with joint tape.

3.06 TRIM INSTALLATION

- A. Coordinate installation of trim progressively with gypsum board installation where trim is of type required to be installed prior to, or progressively with installation of gypsum board.
 - B. Securely fasten trim pieces in accordance with manufacturer's printed instructions.
 - C. Install cornerbeads at external corners. Install LC-Bead (J-Bead) beads at unprotected (exposed) edges and where gypsum board abuts dissimilar materials. Use single unjointed lengths unless otherwise approved by the Commissioner.
 - D. Comply with joint compound manufacturer's recommended drying time for the relative humidity and temperature at time of application. Allow minimum of 24 hours drying time between applications of joint compound.
- A. General: Finish panels to levels indicated below, in accordance with ASTM C 840, for locations indicated.
- 1. Level 3 Finish: Joints and angles, provide tape embedded in joint compound and provide two separate applications of joint compound over all joints, angles, and fastener heads. Accessories shall be covered with two

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separate coats of joint compound. Joint compound to be smooth and free of tool marks and ridges. Cover the prepared surface with a drywall primer prior to the application of the final decoration.

END OF SECTION

SECTION 092214
FURRING FOR GYPSUM BOARD CEILINGS

PART 1 GENERAL

1.01 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

- A. Concrete Inserts: Installed under the Work of Section 033000.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Gypsum Board Assembly: Section 092116.
- B. Suspended Acoustical Ceiling: Section 095300.

1.03 DEFINITIONS

- A. Gages:
 - 1. Sheet Steel: US Standard.
 - 2. Steel Wire: US Steel Wire Gage.
- B. Galvanizing: Hot dip process, unless otherwise indicated.

1.04 DESIGN REQUIREMENTS

- A. The furring system shall support the weight of the ceiling system (including finish) plus the weight of the lighting system. Additional intermediate supports (struts) and hangers shall be included as required to support the required weights.

1.05 SUBMITTALS

- A. Product Data: Manufacturer's specifications and installation instructions for the following:
 - 1. Main Beams.
 - 2. Cross Channels.
 - 3. Channel Mold.
 - 4. Cross Tees.
 - 5. Hangers.

1.06 QUALITY ASSURANCE

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- A. Fire Resistive Rated Applications: Provide UL listed or ASTM E 119 tested materials, accessories, and application procedures to comply with the rating indicated.

1.07 STORAGE

- A. Protect metal items against distortion and rusting.

1.08 PROJECT CONDITIONS

- A. Sequencing: Coordinate furring with adjoining Work.
1. Coordinate delivery of items to be cast in poured concrete, to avoid delay.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Subject to compliance with requirements, provide products of one of the specified manufacturers
1. Dietrich Metal Framing
 2. Milicor Division; Inryco Inc.
 3. Phillips Manufacturing Co.
 4. Gold Bond Building Products Division;
National Gypsum Co.
 5. United States Gypsum Co.
- Or approved equal.

2.02 MATERIALS

- A. Main Beams: Minimum 24 gage, 1-1/2 inches by 15/16 inch galvanized steel tee sections, slotted 8 inches O.C. for intersecting cross channels or cross tees and 4 inches oc for hangers, with integral splices stamped at each end.
1. Minimum Moment of Inertia: .0280 in⁴.
 2. Minimum Section Modulus: .0290 in³.

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- B. Cross Channels: Minimum 25 gage, 2-7/8 inches by 7/8 inch galvanized steel hat shaped sections, with stamped locks on each end to fit corresponding slots in main beams and knurled screw surfaces.
- C. Channel Mold: Minimum 25 gage, 1 inch by 1 inch by 1/2 inch galvanized steel channel sections.
- D. Cross Tees (For Fire Rated Ceiling Systems): Minimum 25 gage galvanized steel tee sections, with stamped locks on each end to fit corresponding slots in main beams.
- E. Hangers:
 - 1. Minimum Size: As specified or shown on the Drawings; if not indicated, comply with minimum size requirements of ASTM C 841 for maximum ceiling area to be supported.
 - 2. Flat Type: 3/16 x 1 inch mild steel straps, galvanized or painted with black asphaltum paint, punched or drilled for 3/8 inch diameter bolts.
 - 3. Rod Type: Galvanized mild steel pencil rods.
 - 4. Wire Type: Type 302 stainless steel.
 - 5. "T" Type: 16 gage galvanized steel hangers; Fehr Bros. Mfgs., Inc.'s "T-Hangers".
- F. Inserts: Hohmann and Barnard's No. HD Threaded Insert for 1/2 inch diameter bolt.
- G. Clips for Attaching Hangers to Steel Joists: Galvanized steel clips or clamps specifically designed for this purpose, which do not depend on friction to hold device in place. Use of drive-on clips or clamps will not be permitted.
- H. Welded Studs: Low carbon steel copper flashed studs, 1/4 - 20 UNC, automatic short-cycle welded with a transformer-rectifier power source. When surface on which studs are installed is to receive fireproofing, furnish studs of length to extend one inch below fireproofing.
- I. Expansion Anchors: Double cinch type, of soft metal alloy.
- J. Bolts: 3/8 inch diameter, length as required for full threads for nut.

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PART 3 EXECUTION

3.01 INSTALLATION

- A. General:
1. Install Work of this section in accordance with the manufacturer's printed instructions, except as otherwise indicated.
 2. Do not bridge expansion joints with grillage.
- B. Hangers: Unless otherwise shown, install hangers as follows:
1. Attachment to Poured Concrete Slabs: Embed a part or member of hanger assembly in the concrete in a manner to develop full strength of hanger.
 2. Attachment to Structural Steel Framing: Clinch hanger around top flange of steel framing member approximately 135 degrees. If framing member supports roof planks or precast slabs, bolt hanger to center of web or weld to bottom flange. Where applicable, hanger wires may be directly double wound around steel members with wire twisted together securely.
 3. Attachment to Steel Joists: Secure hanger with special clip or clamp designed for such use. Where applicable, hanger wires may be directly double wound around steel members with wire twisted together securely.
 4. Attachment to Precast Tees, Slabs and Planks: Insert "T" hangers through joints between the units. Where concrete fill is required, lay out and install hangers prior to placing fill.
 5. Attachment to Steel Decks: Secure hangers with welded studs. Locate studs as close to deck supports as possible. Install studs in accordance with manufacturer's instructions. After installation, clean stud welds and repair the affected areas of deck and studs with cold galvanizing compound. Attach hangers to stud bolts with double nuts.
 6. Attachment to Wood Framing (Except Trusses): Secure hanger with threaded fastener.
 7. Attachment to Wood Trusses: Double wind hanger wire around bottom chord member and twist wire together securely.

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- C. Openings: Frame openings, including openings for items provided with extra cross channels or cross tees unless otherwise indicated.
- D. Furring: Erect furring to form a true plane, or curved surface where so designed, and securely fasten in place. Set cross channels or cross tees perpendicular to main beams.
- E. Suspended Ceilings:
 - 1. Form suspended ceilings with hangers, channel mold, main beams, cross channels and/or cross tees.
 - 2. Attach hangers to supporting construction, spaced 4 feet oc and within 6 inches of ends of main beams. Where ducts or other items, including items provided under Related Contracts (if any), interfere with the spacing of hangers, install trapeze type hangers under the obstructing items to support ceiling hangers.
- F. Furred Ceilings: Form furred ceilings with cross channels, unless otherwise indicated.

END OF SECTION

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SECTION 093013
CERAMIC TILE

PART 1 GENERAL

1.01 REFERENCES

- A. Tile Manufacturing Standard: Comply with the requirements of ANSI "American National Standard Specifications for Ceramic Tile" (ANSI A137.1)
- B. Installation Standards: Comply with the requirements of ANSI "American Standard Specifications for the Installation of Ceramic Tile" (ANSI A108, A118 and A136), and correlating Tile Council of America (TCA) details except as shown or specified otherwise.

1.02 SUBMITTALS

- A. Product Data: Catalog sheets, specifications, and installation instructions for each of the following:
 - 1. Tile and trim units.
 - 2. Setting materials, except reinforcement, membrane, and primer.
 - 3. Grouting materials.
 - 4. Marble door thresholds.
- B. Samples:
 - 1. Tile and Grout: Each type and color required; 12 x 12 inch samples with tile mounted on braced cement backer board and grouted.
 - 2. Trim Units: Each type and shape required.
 - 3. Color Samples:
 - a. Tile manufacturer's standard range of colors and textures for each tile type required.
 - b. Grout manufacturer's standard range of colors for each grout type required.
 - 4. Marble thresholds in 6 inch lengths.
- C. Quality Control Submittals:
 - 1. Tile Grade Certificates: Furnish tile manufacturer's Master Grade Certificate bearing the manufacturer's certification for each shipment, type and composition of tile.
- D. Contract Closeout Submittals:
 - 1. Maintenance Data: Tile and grout manufacturer's recommended cleaning and stain removal methods and materials.

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1.03 QUALITY ASSURANCE

- A. Manufacturer:
 - 1. Obtain each color, grade, finish, type, composition, and variety of tile from one source with resources to provide products from the same production run for each contiguous area of consistent quality in appearance and physical properties without delaying the Work.
 - 2. Obtain ingredients of a uniform quality for each mortar, waterproof membrane, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.

- B. Certifications:
 - 1. Tile manufacturer's Master Grade Certification for each shipment of tile.

- C. Performance Criteria:
 - 1. The following criteria are required for products included in this section:
 - a. All ceramic flooring must be certified as compliant with the FloorScore standard by an independent third-party.
 - b. Tile setting adhesives and grout must not exceed the volatile organic compound (VOC) content limits established in South Coast Air Quality Management District (SCAQMD) Rule 1168.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement of ANSI A137.1 for labeling sealed tile packages.

- B. Prevent damage or contamination to materials by water, freezing, foreign matter, and other causes.

1.05 PROJECT CONDITIONS

- A. Environmental Requirements: Do not install tile until construction in spaces is completed. Set and grout tile when ambient temperature is 50 degrees F (10 degrees C) or higher and humidity conditions are being maintained. Substrate must be free of ice. All work to meet material manufacturer's recommendations.

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1.06 ATTIC STOCK

- A. Extra Materials: Furnish extra tile, equal to 3 percent of the tile installed, of each type, composition, pattern, size and color of tile required. Also furnish a proportionate number of trim units. Place extra materials packaged with protective covering in storage at the site where directed.

PART 2 PRODUCTS

2.01 TILE

- A. Glazed Wall Tile: Complying with Section 6.1, ANSI A 137.1; Standard Grade, and the following requirements:
1. Module Size: 4-1/4 by 4-1/4 inches.
 2. Thickness: 5/16 inch.
 3. Face: Plain with modified square edges or cushion edges.
 4. Face: Plain with manufacturer's standard edges.
 5. Finish: Bright glaze.
 6. Mounting: Factory back-mounted.
- B. Unglazed Paver Tile: Complying with Section 5.3, ANSI A 137.1; Standard Grade, and the following requirements:
1. Composition: Porcelain.
 2. Facial Dimensions: 11-13/16 by 11-13/16 inches.
 3. Thickness: 1/4 inch.
 4. Face: Plain with square edges.
- C. Trim Units: Furnish necessary trim shapes of same material, grade, type, and finish as flat tile unless otherwise indicated. Furnish trim for head, jambs and sills of openings, external corners, and the following:
1. Base for Portland Cement Mortar Installations: Coved.
 2. Base for Thin-Set Mortar Installations: Straight.
 3. Tapered Transition Tile: Shape designed to effect transition between thickness of tile floor and adjoining floor finishes of different thickness, tapered to provide a reduction in thickness from 1/2 to 1/4 inch across nominal 4-inch dimension.
- D. Colors: Tile colors shall be as indicated on the Drawings, or if not indicated, as selected by the Commissioner from tile manufacturer's standard range of colors.
- E. Waterproofing for Thin Set Tile: Comply with ANSI A118.10 and manufacturer's recommendations.

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2.02 SETTING MATERIALS

- A. Portland Cement Mortar: Complying with ANSI A 108.1, or ANSI A 108.5 in combination with ANSI A 108.1.
 - 1. Portland Cement: ASTM C 150, Type 1.
 - 2. Sand: ASTM C 144.
 - 3. Hydrated Lime: ASTM C 206 or ASTM C 207, Type S.
 - 4. Water: Clean and potable.

- B. Dry-Set Mortar: Complying with ANSI A 118.1, and meeting the requirements for setting the particular type of tile to be set with the mortar.

- C. Epoxy Mortar: Complying with ANSI A 118.3, chemical resistant, and water cleanable before setting.

- D. Primer: As recommended by the mortar/adhesive manufacturer.

2.03 GROUTING MATERIALS

- A. Dry-Set Grout: Compound of Portland cement and additives, factory blended for the type of tile to be grouted, and complying with ANSI A 118.6.

- B. Colors:
 - 1. As selected by the Commissioner from grout manufacturer's standard range of colors.

2.04 MISCELLANEOUS MATERIALS

- A. Metal Edge Strips: White zinc-alloy terrazzo strips, 1/8 inch wide at top edge with integral provision for anchorage to mortar bed or substrate, unless otherwise indicated.

- B. Trowelable Underlayments and Patching Compounds: Latex-modified, portland-cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

2.05 MARBLE DOOR THRESHOLDS

- A. Marble: Sound Group A marble equal to any of the following varieties and color ranges:
 - 1. Vermont Champlain Black or Highland Danby (Gray).
 - 2. Missouri Ozark (Gray) or Georgia Solar Gray.
 - 3. Tennessee Edward Pink, Marmor (Pink), Craig Pink, or Cedar Tavernelle (Red-Reddish Brown).

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- B. Fabricate thresholds to equal width of door jambs, with true planes, edges straight, and free of chipped or broken arises and corners.
 - 1. Raised Thresholds: Depth shall be as required to finish 1/2 inch above finished tile floor and have a minimum thickness of 1-1/4 inches, unless otherwise shown. Bevel exposed edge arises 1/4 by 1/4 inch.
 - 2. Flush Thresholds: 7/8 inch thick, unless otherwise shown.
 - 3. Finish: Honed finish on exposed faces and edges.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
- B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Provide concrete substrates for tile floors installed with dry-set or latex-portland cement mortars that comply with flatness tolerances specified in referenced ANSI A 108 series of tile installation standards for installations indicated.
 - 1. Use trowelable leveling and patching compounds per tile-setting material manufacturer's written instructions to fill cracks, holes, and depressions.
 - 2. Remove protrusions, bumps, and ridges by sanding or grinding.
- B. Protection: Protect adjacent surfaces before tilework begins.
- C. Cleaning: Clean substrate surfaces in accordance with applicable reference standards and manufacturer's installation instructions.

3.03 INSTALLATION

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- A. Install ceramic tile in accordance with ANSI A 108.1 thru ANSI A 108.7, as applicable for type of tile and method of installation, and in accordance with the printed installation instructions of the tile and setting material manufacturers.
 - 1. Neutralize and seal substrate as required by the mortar/adhesive manufacturer's instructions.
 - 2. Mix and apply proprietary setting and grouting materials in compliance with the manufacturer's instructions.

- B. Setting Beds:
 - 1. Walls: Portland cement mortar.
 - 2. Walls: Dry-set mortar.
 - a. Concrete Unit Masonry Walls: Apply a leveling coat of latex-Portland cement mortar, or an underpayment material recommended by the setting material manufacturer, to form true planes for thin-bed setting material prior to setting tile.
 - 3. Walls: Latex-Portland cement mortar.
 - 4. Floors: Portland cement mortar.
 - 5. Floors: Dry-set mortar.
 - 6. Floors: Latex-Portland cement mortar.
 - 7. Floors: Epoxy mortar.

- C. Joint Pattern: Install tile in grid pattern with 1/16 inch joint width, unless otherwise indicated.

- D. Layout tilework on principal walls, with tilework field centered in both directions on the floor and lengthwise on walls in each space, so that no tile less than one-half full size will occur, unless otherwise approved to suit the features of the space. Align joints when adjoining tiles are the same size. Maintain uniform joint width.

- E. Extend tilework into recesses and under equipment and fixtures, to form a complete covering without interruptions, except as otherwise shown. Terminate tilework neatly at obstructions, edges, and corners without disruption of pattern or joint alignments.

- F. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

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- G. Edge Strips: Install metal edge strips at edge of tile meeting other types of flooring, unless otherwise indicated.
- H. Grouting: Comply with ANSI A 108.10 or 108.6, as applicable for type of grout, and manufacturer's installation instructions. Make joints watertight, and without voids, cracks and excess grout. Damp cure in accordance with reference standards and manufacturer's instructions when applicable.
 - 1. Walls:
 - 2. Floors:
- I. Marble Door Thresholds: Set marble thresholds in a full bed of the same type of setting material specified for adjoining tilework, unless otherwise indicated.

3.04 ADJUSTING

- A. Check the tilework installation. Remove defective tile and retile. Leave finished installation free of cracked, chipped, broken, unbonded, and otherwise defective tilework.

3.05 CLEANING

- A. On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter. Comply with grouting specifications and with grout manufacturer's printed instructions for materials and method.
 - 1. Remove latex-portland cement grout residue from tile as soon as possible.
 - 2. Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's written instructions, but no sooner than 10 days after installation. Protect metal surfaces, cast iron, and vitreous plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning.
- B. Clean and polish marble door thresholds. Remove stains and other defacement.

3.06 PROTECTION

- A. Apply heavy kraft paper, or other approved heavy protective covering, masked in place over tilework to prevent staining, damage, and wear.

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- B. Prohibit foot and wheel traffic on newly tiled areas for seven days after completion of installation unless otherwise approved by the Commissioner.
- C. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

END OF SECTION

SECTION 09 53 00
SUSPENDED ACOUSTICAL CEILING SYSTEMS

PART 1 GENERAL

1.01 REFERENCES

- A. ASTM C 635 - Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
- B. ASTM C 636 - Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
- C. ASTM E 1414 - Standard Test method for Air-born Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum.
- D. ASTM E 1264 - Standard Classification for Acoustical Ceiling Products.
- E. Ceilings and Interior Systems Contractors Association (CISCA) Acoustical Ceilings: Use and Practice.
- F. UL - Fire Resistance Directory and Building Material Directory.

1.02 SYSTEM DESCRIPTION

- A. Suspended Ceiling System consisting of main runners and cross runner tees snapped together to form modules or grids for the installation of lay-in acoustical tiles or panels, air diffusers, and light fixtures.
- B. Structural Performance and Suspension System Types:
 - 1. Type ID/EG: Intermediate duty, direct hung, exposed grid. (Minimum load carrying capability of main runner: 12 lb/lin ft).

1.03 SUBMITTALS

- A. Product Data: Manufacturer's catalog sheets, specifications, and installation instructions for the following:
 - 1. Each suspension system type specified.
 - 2. Acoustical units specified.
 - 3. Integral access units.
- B. Samples:

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1. Suspension System Materials: 12 inches long of exposed suspension system, component members, including moldings, for each color and system type required.
 2. Acoustical Units: 12 inches square, each type, pattern, and color specified.
- C. Quality Control Submittals:
1. Certification: Manufacturer's written statement, certifying that the suspension system meets or exceeds the specified structural requirements.
- D. Contract Closeout Submittals:
1. Maintenance Instructions: Two copies of the manufacturer's printed recommendations for cleaning and refinishing the acoustical units. Include precautions regarding materials and methods which may be detrimental to finish and acoustical efficiency.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical units and suspension system components to the Project Site in original, unopened packages and store them in a fully enclosed space protected against damage from moisture, direct sunlight, surface contamination, and other causes.
- B. Open ends of acoustical unit packages 24 hours before installation to stabilize moisture content and temperature.
- C. Handle acoustical units carefully to avoid chipping edges or damaging units in any way.

1.05 PROJECT CONDITIONS

- A. Environmental Requirements: Comply with acoustical units manufacturer's printed temperature and ventilation requirements before, during, and after installation.
- B. Space Enclosure: Do not install interior acoustical units until space is enclosed and weatherproof, wet

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work in spaces is completed, and work above ceilings is complete.

1.06 ATTIC STOCK

- A. Furnish extra materials described below to match products installed, are packaged with protective covering for storage, and are identified with appropriate labels. Furnish quantities equal to 2 percent of acoustical units and exposed suspension system components installed.

PART 2 PRODUCTS

2.01 METAL SUSPENSION SYSTEM MATERIALS

- A. Provide manufacturer's standard metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable ASTM C 635 requirements.
- B. Recycled Content: Provide products made from steel sheet with average recycled content such that post-consumer recycled content plus one-half of pre-consumer recycled content is not less than 25 percent.
- C. Grid Materials:
1. Double-web design main runners and cross-runner tees roll-formed from electrogalvanized cold rolled sheet steel with prefinished steel caps on flanges.
 - a. Exposed Tees: 9/16 inch wide caps minimum and 15/16 inch wide caps maximum.
 2. Grid Finish: Prepainted white or color as selected from manufacturer's standard colors.
- D. Accessories:
1. Wall Moldings and Trim: Steel or extruded aluminum of types and profiles indicated, or if not indicated, manufacturer's standard prefinished moldings for edge penetrations that fit type of edge detail and suspension indicated.
 2. Hold-down Clips: Designed to hold acoustical units in place and, where required, of special type to provide access to plenum.

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3. Acoustical Sealant: Manufacturer's recommended paintable, permanently flexible shrink and stain resistant sealant.
- E. Attachment Devices:
1. Hanger Clips: Galvanized steel clips or clamps specifically designed for attachment to structural steel. Drive-on clips or clamps which depend on friction to hold the device are not acceptable.
 2. Welded Studs: Low carbon steel copper flashed studs, 1/4 - 20 UNC, automatic short-cycle welded to a transformer-rectifier power source. When surface on which studs are to receive fireproofing, furnish studs of length to extend one inch below fireproofing.
 3. Wire Hangers, Braces, and Ties: Galvanized carbon steel, soft temper; prestretched. Yield stress at least 3 times design load but not less than 12 gage, .106 diameter.
 4. Hanger Rods: Mild steel, zinc coated, or protected with rust inhibitive paint.
 5. Flat Hangers: Mild steel, zinc coated, or protected with rust inhibitive paint.
 6. Hanger Tees: Galvanized steel, 16 gage T-hangers for attachment to precast concrete decks.
 7. Expansion Anchors: Double cinch type, of soft metal alloy.
 8. Bolts: 3/8 inch diameter, length as required for full threads of nut.
 9. Miscellaneous Fasteners: Bolts, screws, and other fasteners recommended by suspension system manufacturer and necessary to install the Work.

2.02 ACOUSTICAL UNIT MATERIALS

- A. Standard for Acoustical Units: Manufacturer's standard units of configuration indicated that comply with ASTM E 1414 and ASTM E 1264, conforming to the following:
1. Noise Reduction Coefficient (NRC) Range: 0.50 - 0.75.
 2. Ceiling Attenuation Class (CAC) Range: 30 - 34.
 3. Light Reflectance Coefficient (LR): 0.75 or greater.
 4. Recycled Content: Provide acoustical panels with recycled content such that postconsumer recycled

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content plus one-half of pre-consumer content constitutes a minimum of 45-70% by weight.

- B. Acoustical Units:
 - 1. Mineral base with factory applied painted finish. (Type III).
- C. Tile Dimensions and Edge Details:
 - 1. Size: 24"x24".
 - 2. Edges: Beveled, spline.
- D. Pattern Description:
 - 1. Color: White.
 - 2. Finish: Vinyl Latex Paint.
- E. Integral Access Units: Provide 12 x 24 inch access units, formed from special suspension members and matching tile with edges modified to allow removal.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates and structural framing scheduled to receive the ceiling system for compliance with requirements specified. Do not install the Work until unsatisfactory conditions are corrected.

3.02 INSTALLATION OF SUSPENSION SYSTEM

- A. Install acoustical ceiling suspension system to comply with installation standard ASTM C 636, in accordance with the manufacturer's printed instructions, and CISCA "Ceiling System Handbook".
- B. Lay-out system to a balanced design with edge units no less than 50 percent of acoustical unit size.
- C. Hang suspension system independent of walls, columns, ducts, pipes, and conduit.
- D. Hangers:
 - 1. Attach hangers to supporting construction, spaced 4 feet oc maximum and within 6 inches of ends of main beams. Where ducts or other items, including items provided under related contracts (if any), interfere with the spacing of hangers, install

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trapeze type hangers under the obstructing items to support ceiling hangers.

2. Wrap hanger wire ends a minimum of three times horizontally, forming tight loops and turning ends upward.
3. Do not kink or bend hangers as a means of leveling components.

E. Attachment of Hangers to Supporting Construction:
Unless otherwise shown, secure the hangers to the construction as follows:

1. Attachment to Existing Cast-in-Place Concrete: Attach hangers to clip angles, fastened to the concrete with expansion bolts or drive pins.
2. Attachment to Structural Steel Framing: Clinch hanger around top of flange of steel member approximately 135 degrees. If framing member supports roof planks or precast slabs, bolt hanger to center of web or weld to bottom flange. Where applicable, hanger wires may be directly double wound around steel members with wires twisted together.
3. Attachment to Steel Joists: Secure hanger with special clip or clamp designed for such use. Where applicable, hanger wires may be directly double wound around steel members with wires twisted together.
4. Attachment to Precast Tees, Slabs, and Planks: Insert "T" hangers through joints between the units. Where concrete fill is required, lay out and install hangers prior to placing fill.
5. Attachment to Steel Decks: Secure hangers with welded studs. Locate studs as close to the deck supports as possible. Install studs in accordance with manufacturer's printed instructions. After installation, clean stud welds and repair the affected areas of deck and studs with cold galvanizing compound. Attach hangers to studs with double nuts.
6. Attachment to Wood Framing (Except Trusses): Secure hangers with threaded fasteners.
7. Attachment to Wood Trusses: Double wind hanger wire around bottom chord member and twist wire together securely.

F. Suspension System Installation Tolerances:

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1. Form right angles at intersections of main and cross runners.
 2. Install main runners level to within 1/8 inch in 12 feet. Install cross runners to within 1/32 inch of the required center distances (non-cumulative beyond 12 feet).
 3. Align vertical distance of exposed surfaces between intersecting runners to within 0.015 inch.
 4. Limit horizontal gaps in exposed surfaces of intersecting or abutting members to within 0.020 inch.
- G. Wall Moldings and Trim: Install moldings and trim of type indicated where ceilings intersect vertical surfaces. Use manufacturer's recommended fasteners suited for secure attachment to the particular substrate.
1. Sealant Bed: Apply continuous ribbon of acoustical sealant, concealed on back of vertical leg of moldings before they are installed.
 2. Screw attach moldings to substrate at intervals not over 16 inches oc and not more than 3 inches from ends, leveling with ceiling suspension system to tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.

3.03 INSTALLATION OF ACOUSTICAL UNITS

- A. Install acoustical units in accordance with the manufacturer's printed instructions, unless otherwise shown or specified.
1. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
 2. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
 3. Scribe and cut acoustical units to fit accurately at borders and at penetrations.
 4. Where tiles are not supported by suspension members, install splines at unsupported joints.
 5. Keep border tiles in compression by inserting spring steel spacers between tiles and moldings. Place one spacer bar at the center of each tile.

3.04 CLEANING AND ADJUSTING

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- A. Clean exposed surface of acoustical ceilings, including trim, wall moldings, and suspension members. Comply with manufacturer's printed instructions for cleaning and touch-up of minor finish damage.

END OF SECTION

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SECTION 096519

RESILIENT FLOORING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide all vinyl composition tile, solid vinyl sheet flooring, slip retardant vinyl sheet flooring, reducer strips, transition strips, vinyl base (at resilient flooring and at carpet), interior detectable warning surfaces and other accessories noted herein.

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM), latest editions.
- D2047 Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine
- E84 Test Method for Surface Burning Characteristics of Building Materials.
- E648 Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.
- E662 Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
- F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
- F1303 Standard Specification for Sheet Vinyl Floor Covering with Backing
- F1066 Vinyl Composition Floor Tile, Comp 1, Class 2
- F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
- B. Federal Specifications (FS)
- SS-W040 Wall Base: Rubber and Vinyl Plastic.

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SS-T-312 Tile, Floor: Asphalt, Rubber, Vinyl, Vinyl Composition.

L-F-475A (3)

RR-T-650B

P-F-430

C. Where the language in any of the documents referred to herein is in the form of a recommendation or suggestion, such recommendations or suggestions shall be deemed mandatory under this contract.

1.03 SUBMITTALS

A. Product Data

Manufacturers' specifications, installation instructions, surface preparation requirements and maintenance manuals for each material specified.

B. Samples

1. For Initial Selection: Submit actual sections of resilient flooring materials, showing full range of colors and patterns available, for each type of resilient flooring required
2. For Verification, prior to installation, submit the following:
 - a. Resilient tile: Full size, each type, size and color specified:
 - 1) Light Reflectivity (L.R.): Sample tiles submitted must have light reflective values of each tile noted either by Light Reflectivity (L.R.) Sample tiles submitted must have light reflective values of each tile noted either by Stamping L.R. value on back or Stamping L.R. value on back or Printed schedule form (submit in triplicate).
 - b. Vinyl Sheet: 12 inch square section.
 - c. Base: 12 inch long sections, each type and color specified.

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- d. Feature Strip: 12 inch long section, each color selected
- f. Stair coverings: 12 inch long section of each member type.
- g. Detectable Warning Surfaces: one tile or 12" x 12" piece.

1.04 QUALITY ASSURANCE

A. Certifications

- 1. Furnish manufacturer's certification from an independent testing laboratory acceptable to authorities having jurisdiction that resilient flooring complies with the fire test performance requirements specified herein.
- 2. Furnish certification from flooring installer that the substrate surfaces have been examined and are acceptable for installation of the Work of this Section.

B. Fire Test Performance

Provide resilient flooring, treads and risers which comply with the following performance criteria as determined by an independent testing laboratory acceptable to authorities having jurisdiction.

- 1. Critical Radiant Flux (CRF): Not less than 0.45 watts per sq. cm. as per ASTM E 648.
- 2. Flame Spread: Not more than 75 as per ASTM E84. Class B 27-351
- 3. Smoke Density: Not more than 450 as per ASTM E662.

C. Slip Resistance

All flooring materials with coatings shall have a slip resistance of at least 0.60 when tested in accordance with ASTM D2047.

1.05 DELIVERY, STORAGE, AND HANDLING

PHASE II BUILDING RENOVATIONS

A. Delivery

Deliver material in good condition to the site in manufacturer's original unopened containers with label information clearly marked thereon.

B. Storage

Store materials (resilient flooring, base and adhesives) in location protected from the weather and having a minimum temperature of 68°F for at least 24 hours prior to start of laying of flooring.

1.06 PROJECT CONDITIONS

A. Environmental Requirements

Continuously heat spaces to receive flooring to a temperature of 68°F for at least 48 hours prior to flooring installation, and for 48 hours after installation. Maintain a minimum temperature of 55 deg. thereafter. Do not install products until they are at the same temperature as the spaces in which they are installed.

B. Install resilient flooring and accessories after other finishing operations, including painting, have been completed. Do not install resilient flooring over concrete slabs until the latter has been cured and is sufficiently dry to achieve bond with adhesive as determined by manufacturer's recommended bond and moisture test. The Contractor shall allow sufficient time for the slab to dry out before installation of resilient flooring is started.

1.07 ATTIC STOCK

A. Extra Materials

1. Furnish additional floor covering materials for replacement to the Commissioner, including manufacturer maintenance information.
2. Furnish materials of each size, color pattern, and type of material included in the Work. All materials must be new, clean, undamaged and in original containers.
3. Furnish materials at the rate of one (1) carton for each 1000-1500 sq. ft of material installed.

PHASE II BUILDING RENOVATIONS

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Vinyl Composition Tile

1. Amtico Flooring Division, Domco, Florence AL
2. Armstrong World Industries, Inc.: "Imperial Texture/Excelon Supreme".
3. Azrock Floor Products Div., Domco, Florence AL: "Cortina/Premier".
4. Tarkett, Inc.: "Expressions/Signal"
5. Mannington Mills, Inc.: "Essentials" "and Designer Essentials"

B. Vinyl Wall Base and Accessories

1. Armstrong World Industries, Inc.
2. Mercer Plastic Co., Inc.
3. Tarkett, Inc.

Or approved equal.

C. Vinyl Composition Feature Strips

1. Armstrong World Industries, Inc.
2. Azrock Products Div., Domco
3. Amtico Flooring Division, Domco

Or approved equal.

D. Moisture Test Kits:

1. Vinyl Plastics, Inc. Sheboygan, WI 53082
2. Sealflex Industries Costa Mesa, CA
3. Floor Seal Technology, Inc. San Jose, CA 95112

Or approved equal.

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2.02 MATERIALS

A. Vinyl Composition Tile (VCT)

Provide VCT product, of domestic manufacture, in compliance with Fed. Spec SS-T-312, Type IV, Composition I, and ASTM F1066, Comp. 1 Class 2 through pattern, asbestos free, complying with the following requirements:

1. Size: 12" x 12" x 1/8" gage
2. Color: As indicated on the drawings
3. Light Reflectivity: Maximum range as per Manufacturers Light Reflectivity Tables

D. National Fire Protection Association (NFPA)

Standard 253 Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.

E. Detectable Warning Surfaces (Interior locations)

1. Detectable Warning Surfaces shall be in compliance with the current requirements of the Americans with Disabilities Act, Section 4.29.
2. Material: Composite (polyester) or rubber.
3. Size: 12" x 12" x 1/4" thick tactile tiles.
4. Manufacturer's standard colors as selected by Project Architect.

2.03 ACCESSORIES

A. Vinyl Base

1. Fed. Spec. SS-W-40, Type II of standard solid colors as selected, as follows:
2. 4" high, 1/8" thick (tolerance \pm .005"), compression type.
3. Top corner rounded, bottom coved, arranged for above floor application. Provide straight base for carpeting.

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4. Provide mitered or coped inside corners and preformed external corners.
 5. Colors as selected by Architect/Matte finish.
- B. Resilient Edge Strips, Transition Strips, Reducer Strips, etc.
- 1/8" thick, homogeneous vinyl, tapered or bullnose edge, color to match flooring, or as selected by Architect from standard colors available; not less than 1" wide.
- C. Resilient Feature Strips
- 1/8" thick, vinyl composition, 1" x 24" standard colors
- D. Adhesives
1. Type as recommended by manufacturer for particular resilient flooring and base.
 2. Adhesive suitable for adhesion to plaster, concrete, masonry, metal or wood, waterproof after drying to resist action of water.
- E. Edging Strip
1. Brass or White alloy metal.
 2. Under flange type, with anchors suitable for type of subfloor indicated.
- F. Vinyl Saddles
1. Flush or tapered as indicated.
 2. Thickness to suit abutting floor covering material.
 3. Colors as selected by Project Architect.
- G. Concrete Slab Primer
- Resilient flooring adhesive manufacturer's recommended primer for preparation of porous or dusty concrete, non-staining type.
- H. Leveling and Patching Compound

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Hydraulic-cement-based, polymer-modified, self-leveling product that can be applied in minimum uniform thicknesses of 1/8 inch (3 mm) and that can be feathered at edges to match adjacent floor elevations.

1. Compressive strength: Not less than 4100 psi at 28 days when tested according to ASTM C 109/C 109M.
2. Underlayment: Ardex K-15 or Dayton Superior Levelayer I.
3. Leveling and patching compounds containing gypsum are not permitted.

I. Floor Polish

Fed. Spec. P-F-430, heavy traffic water emulsion floor wax, as recommended by flooring manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

A. General

1. Installer shall inspect subfloor surfaces to determine that they are satisfactory. A satisfactory subfloor surface is one that is clean, dry, flat, smooth, level and free from cracks, holes, ridges, or coatings preventing adhesion, and other defects impairing performance or appearance. Notify the Commissioner of conditions, which will adversely affect flooring installation. Do not proceed with installation until conditions have been corrected.
2. Installation of the resilient flooring (or any component thereof) shall indicate the Contractor's acceptance of the subfloor as a satisfactory substrate to its work.
3. Do not allow resilient flooring work to proceed until subfloor surfaces are satisfactory.

B. Concrete Subfloor

1. Perform bond and moisture tests on concrete subfloors to determine if surfaces are sufficiently cured and dry as well as to ascertain

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presence of curing, sealing, hardening or any other compounds.

- a. Bond Tests shall be in accordance with resilient flooring Manufacturer's Installation Manual.
- b. Moisture vapor transmission shall not exceed 5 pounds per 1,000 square feet in 24 hours. Tests shall be in accordance with ASTM F1869.
- c. Installer shall provide certification that the concrete substrate surfaces have been examined and are acceptable in accordance with Article 1.04B.

3.02 SURFACE PREPARATION

- A. Unless otherwise specified, follow the materials manufacturers' written instructions.
- B. Remove dirt, grease, oil, paint, varnish, wax, sealers, curing or hardening compounds and contaminants which may impair the full bonding of the materials to the substrate. Avoid organic solvents. Remove residual adhesives as recommended by the flooring manufacturer.
- C. Concrete Subfloor

Prepare concrete slabs in accordance with ASTM F710.

1. Remove trowel marks or other projections by grinding or sanding.
2. Level uneven surfaces with smooth troweling of mastic underlayment. Follow underlayment manufacturer's application and curing instructions.
3. Provide a substrate surface with not more than 1/8 inch in 10'-0" variation from level or plane of required slope.
4. Treat porous and dusty concrete with primer after vacuum cleaning the surface. Apply primer at the rate recommended by the primer manufacturer.

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5. Broom or vacuum clean subfloor prior to installation of flooring.

3.03 INSTALLATION - GENERAL

- A. Install resilient flooring materials in compliance with manufacturer's latest printed instructions.
- B. Scribe cut and fit resilient flooring to permanent fixtures, pipe trench covers, built-in cabinets, pipes, outlets columns, walls and partitions.
- C. Tightly cement resilient flooring to sub base without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks or other surface imperfections.
- D. Hand roll flooring at perimeter of each covered area to assure adhesion.
- E. Spaces and areas where flooring is being installed shall be closed to traffic and other trades until flooring has set.
- F. Protect finished installation at all times. Contractor will be held responsible for all damage to flooring until Final Acceptance.

3.04 INSTALLATION OF TILE FLOORS

- A. Lay tile from center marks established with principal walls, discounting minor offsets, so that tile at opposite edges of room area are of equal width. Adjust as necessary to avoid use of cut widths less than 1/2 tile at room perimeters. Lay tile square to room axis.
- B. Match tiles for color and pattern by using tile from cartons in same sequence as manufactured and packaged if so numbered. Cut tile neatly around all fixtures. Broken, cracked, chipped, or deformed tiles are not acceptable.
 1. Lay tile in patterns indicated and as directed by the Project Architect.
 2. Lay adjacent tile with direction of texture opposite adjoining tiles.

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- C. Adhere tile flooring to substrates using full spread of adhesive to edge of covered area, applied as directed by tile manufacturer.
- D. Cut tiles using equipment and methods recommended by respective tile manufacturer. Provide smooth cut edges tightly fit to adjacent work.

3.05 INSTALLATION OF ACCESSORIES

- A. Apply wall base to walls, columns, pilasters, casework and other permanent fixtures in rooms or areas where base is required. Install base in lengths as long as practicable, with corners fabricated from base materials with mitered or coped inside corners and preformed external corners. Tightly bond base to substrate throughout length of each piece, with continuous contact at horizontal and vertical surfaces.
 - 1. On masonry surfaces, or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material. Color to match base material.
- B. Place resilient edge strips tightly butted to flooring and secure with adhesive. Install edging strips at edges of flooring which would otherwise be exposed. Locate strips under doors.
- C. Where color of flooring changes between spaces, install feature strip between the two colors. Feature strip shall be centered under the door when it is in a closed position.
- D. Apply resilient accessories to areas as indicated and in strict accordance with manufacturer's installation instructions

3.06 DETECTABLE WARNING SURFACES

- A. Install surface units with adhesive in accordance with Manufacturer's recommendations, as indicated on Drawings and in compliance with ADA Section 4.29 requirements.

3.07 CLEANING AND PROTECTION

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- A. Perform the following operations immediately after completing resilient product installation:
1. Remove adhesive and other blemishes from exposed surfaces.
 2. Sweep and vacuum surfaces thoroughly.
 3. Damp-mop surfaces to remove marks and soil.
 - a. Do not wash surfaces until after time period recommended by manufacturer.
- B. Protect resilient products from marks, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.
1. Apply protective floor polish to horizontal surfaces of vinyl composition tile that are free from soil, visible adhesive, and surface blemishes if recommended in writing by manufacturer.
 - a. Use commercially available polish acceptable to manufacturer for vinyl composition tile.

END OF SECTION

SECTION 099000
PAINTING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. This Section includes surface preparation and field painting of the following:

1. Exposed interior items and surfaces.
2. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural.
3. When removing or disturbing existing paint on surfaces that have not been tested by City of New York for lead content, assume that the existing paint contains lead. Take necessary precautions to protect workers. Provide measures to separate paint removal work areas from occupied areas, and clean-up and disposal.

B. When removing or disturbing existing paint on surfaces that have not been tested for lead content, assume that the existing paint contains lead. Take necessary precautions to protect workers. Provide measures to separate paint removal work areas from occupied areas, and clean-up and disposal. The latest version of the documents listed below shall govern the work:

A. Occupational Safety and Health Administration (OSHA)

1. General Industry Standards, 29 CFR 1910.
2. Lead Standard for General Industry, 29 CFR 1910.1025.
3. Respiratory Protection, 29 CFR 1910.134.
4. Hazard Communication, 29 CFR 1910.1200.
5. Specifications for Accident Prevention Sign and Tags), 29 CFR 1910.245.
6. Construction Industry Standards, 29 CFR 1926.
7. Construction Industry Lead Standard,

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29 CFR 1926.62.

B. Environmental Protection Agency (USEPA)

1. United States Environmental Protection Agency Regulations, 40 CFR Part 261.

C. The New York State Department of Health (DOH).

1.02 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1. Federal Specifications (FS)
2. American Society of Testing and Materials (ASTM)
3. N.Y.S. Department of Environmental Conservation
4. U.S. Department of Labor
5. Occupational Safety and Health Administration (OSHA)

1.03 SUBMITTALS

A. Product Data

Provide manufacturers' product literature for all materials specified and material manufacturer's printed directions and recommendations for environmental conditions, surface preparation, priming, mixing, reduction, spreading rate, application, storage and VOC content, as applicable for each of the materials specified.

B. Quality Assurance

1. Certification that materials for each system are obtained from a single manufacturer.

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2. Certification that materials comply with N.Y.C. and N.Y.S. regulations for Volatile Organic Compounds.

1.04 QUALITY ASSURANCE

A. General

1. All painting materials shall arrive at the job ready-mixed.
2. Varnish containers shall not exceed 5 gallon capacity.
3. Remove all rejected materials from the premises immediately.

B. Qualifications

1. Work of this Section shall be performed by personnel with experience in performing this type of Work.
2. The Contractor shall ensure that all employees meet the qualifications set forth in OSHA, 29 CFR 1926.62 (Lead In Construction Standard).

- C. Source Limitations: Obtain block fillers, primers, and undercoat materials for each coating system from the same manufacturer as the finish coats.

D. Regulatory Requirements

1. N.Y.C. Building Code, latest edition
2. N.Y.S. Department of Environmental Conservation -Part 205 on "Architectural Surface Coatings" - for (VOC) Volatile Organic Compounds.
3. U.S. Department of Labor, Occupational Safety and Health Administration, Construction Industry Standards (29 CFR 1926/1910) Revised 10/1/79, Washington, D.C.
4. Occupational Safety and Health Administration (OSHA) 29 CFR 1926.62 (Lead In Construction Standard).

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5. New York State Department of Environmental Conservation regulations, 6 NYCRR part 364..
6. New York City Department of Environmental Protection Waste water disposal permitting requirements.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Delivery

Deliver materials to the site in original, unopened containers bearing manufacturers name and label containing the following information:

1. Product name or title of material
2. Manufacturer's stock number, batch number, VOC content in grams per liter and date of manufacture.
3. Manufacturer's name
4. Federal Specification number, if applicable.
5. Federal regulations for amount of lead in paint (less the 0.06% lead in non-volatile ingredients)
6. Contents by volume for major pigment and vehicle constitutions
7. Color name and number

B. Storage

1. Commissioner will designate space on premises for storage of materials. Contractor shall restrict storage in this area to paint materials and related equipment, and provide the following:
 - a. Provide one (1) approved chemical dry fire extinguisher equal to 20 lb. CO₂ rating in all assigned rooms or locations where painting materials are stored. Fire extinguisher shall bear the label of the National Board of Fire Underwriters and tag of most recent inspection.
 - b. Provide three (3) standard size red fire pails with clean sand in above locations. At the

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completion of project, fire extinguishers and pails shall become property of Contractor.

2. Maintain storage area in clean condition, store materials not in use in tightly covered containers. Remove oily rags, waste and empty containers from site each night.

1.06 GUARANTEES

- A. Adherence of workmanship and materials to Specifications requirements shall be maintained for the one year Contract guarantee period. These requirements shall include the following:
 1. There shall be no evidence of blistering, peeling, crazing, alligating, streaking, staining, or chalking.
 2. Dirt shall be removed without blemishing the finish by washing with mild soap and water.
 3. Colors of surfaces shall remain free from serious fading; the variation, if any, shall be uniform.
- B. Correct all defects, appearing within the guarantee period, by removal of the defective work and replacement as directed.
- C. All corrective measures shall be the Contractor's responsibility, and shall be made at no extra cost to City of New York.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Subject to compliance with specified requirements, provide "First Line" or "Top Quality" products of one of the following manufacturers:
 1. Benjamin Moore and Co.
 2. Devoe and Reynolds Co.
 3. Glidden Coatings and Resins.
 4. Or approved equal.

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2.02 MATERIALS

- A. Provide products which meet all N.Y.S. Part 205-VOC requirements for applications outlined herein and comply with low V.O.C. requirements.
- B. Provide products which meet all Federal regulations for amount of lead in paint (less than 0.06% lead in non-volatile ingredients).
- C. Provide best quality grade of various types of coatings as regularly manufactured by the paint materials manufacturers. Materials not displaying manufacturers' identification as a standard, best-grade product will not be acceptable.

2.03 COLORS

- A. Selection
 - 1. Paint colors, surface treatments and finishes will be selected by the Commissioner.
 - 2. Color Schedule will be issued to the Contractor after award of the Contract.

2.04 PAINTING SCHEDULE

- A. Interior Finish Schedule - Standard
 - 1. All new and previously unpainted, surfaces shall receive one (1) prime coat and two (2) finish coats unless otherwise specified.
 - 2. All previously painted surfaces shall be spot primed as needed and receive (2) finish coats unless otherwise specified.
 - 3. Finish coats in areas indicated shall have the sheen and gloss levels specified below

Location

Type

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D. Gypsum Drywall and Plaster:

1. Semi-Gloss Finish:

1st Coat - Vinyl Acrylic Latex
Primer Sealer -- 1.0 Mils DFT

2nd & 3rd Coats -
Semi-Gloss Vinyl Acrylic Latex
Enamel -- 1.3 Mils DFT
each coat

2. Gloss Finish:

1st Coat - Vinyl Acrylic Latex
Primer Sealer -- 1.0 Mils DFT

2nd & 3rd Coats -
Gloss Acrylic Latex Enamel -- 1.2 Mils DFT
each coat

3. For use over existing oil based paints

100% Acrylic Primer - - 1.0 mils DFT
Tinted as required to approximate
Finish color

2nd & 3rd Coats -
Semi-Gloss Vinyl Acrylic Latex
Enamel -- 1.3 Mils DFT
each coat

E. Ferrous Metal:

1. Semi-Gloss Finish: Steel Doors and Frames

1st Coat - Alkyd Modified Acrylic Rust Preventive
Latex Primer -- 1.6 Mils DFT

2nd & 3rd Coats -
Semi-Gloss Vinyl Acrylic Latex
Enamel -- 1.3 Mils DFT
each coat

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PART 3 - EXECUTION

3.01 EXAMINATION

A. Verification of Conditions

1. The application of painter's finish to any surface shall be taken to indicate that the Contractor considers such surfaces suitable for a first-class finish.
2. Do not apply painter's finish in any locations until the Work of other Contractors that might damage the new finish is completed.

3.02 PREPARATION AND APPLICATION - EXISTING BUILDING

A. Protection

1. In cases where the painting of surfaces involves removal or disturbance of existing paint and the paint is known or assumed to be lead-based paint, the following protection requirements shall apply:
 - a. All objects near or adjacent to the surface(s) to be painted shall be moved a minimum of three feet away from that surface(s). Any immovable object, and the floor, within the three foot "work area" shall be covered with one layer of 6-mil polyethylene, sealed on all edges to prevent the penetration of dust and debris. If the ceiling is to be painted, all objects in the room and the floor of the room shall be covered in this manner.
 - b. All objects bordering the three-foot work area shall be completely covered with clean cloths, heavy building paper or clean plastic covering.
 - c. The protection shall remain in place during all paint removal activities.
 - d. All protection is to be carefully removed, cleaned or discarded after painting is complete.

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B. Removal of Existing Work

1. Remove wire guards, screens, grilles and similar items as necessary to paint properly all surfaces behind these items.
 - a. These items shall be HEPA vacuumed and wet-cleaned once removed. Once cleaned, the items shall be placed on 6-mil polyethylene sheeting (or equivalent) and covered with a second layer of 6-mil polyethylene sheeting.

C. Surface Preparation

1. Gently wet mist the surface to be scraped with water, then remove all loose paint with scraper and putty knife.
2. Sand existing surfaces to dull sheen and gloss. Before sanding, wet mist the area to be sanded. (Power sanding without a HEPA-filtered vacuum recovery system is not allowed).
3. Remove dust by washing with water, using damp sponge or cloth.
4. After washing, spot prime grease and water stains; magic markers marks, crayon marks, lipstick marks, etc; with a quick-drying alcohol base primer sealer to prevent bleeding.
5. Fill all cracks and holes with appropriate filler material, wet mist and sand flush with adjacent surfaces and spot prime. (Power sanding without a HEPA-filtered vacuum recovery system is not allowed).
6. Existing paint that was not removed with scraper and which appears to be sound shall receive spackling compound around perimeter high spots and feathered out so that surface is smooth. Repair gouges created by the scraping process and other imperfections in the existing surface with spackling compound to provide a smooth, even finished surface.
7. Apply number of finish coats specified herein or as many as may be necessary to obtain the proper finish and completely cover the substrate.

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8. Cement Plaster: Coat surfaces to be patched with an approved bonding agent. Patch with an approved mortar patching mix and finish to match texture of adjacent surfaces.

3.03 APPLICATION

A. General

1. No Work shall be performed in spaces that are not broom clean and free of dust and waste.
2. Apply paint materials to produce smooth finished surfaces, free of brush or roller marks, drops, runs, or sags.
3. Paint materials shall be kept at a proper and uniform consistency.
4. Apply all coats with brush or roller, varying slightly the color of succeeding coats.
5. Brush out or roll on first or prime coat; work well into surface.
6. Each coat shall be inspected, approved and dry before proceeding with additional coats.
7. Finish doors on tops, bottoms and side edges same as exterior faces.

3.04 CLEANING

A. General

Contractor shall clean-up behind each paint crew such that painting and clean-up will be a continuous uninterrupted operation. The practice of one general clean-up after completion of all painting will be strictly prohibited. This clean-up will include, but not be limited to the following:

1. Remove spots or defacement resulting from Work of this Section.

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2. Retouch all damaged surfaces to leave Work in perfect finished condition.
3. If spots or defacement cannot be satisfactorily removed and retouched, re-finish the surfaces as directed.
4. Within the three foot work area created for removal and painting where existing paint is known or assumed to be lead-based all objects and surfaces shall be thoroughly HEPA vacuumed, wet-cleaned and HEPA vacuumed again. In rooms where the ceiling has been painted all surfaces and objects in the room shall be cleaned in this manner.
5. The contractor shall ensure that the objects and surfaces under protective covering are free of any dust or debris created during painting activities. If necessary, these objects and surfaces shall be wet cleaned and HEPA vacuumed.
6. The contractor shall conduct any cleaning deemed necessary by the Commissioner.
7. Free all operating units of painted materials and leave them clean and in proper working order.
8. Remove from premises all surplus paint materials, debris and any other rubbish resulting from the Work.
9. Leave storage space clean and in condition required for equivalent spaces in project.

3.05 PROTECTION

- A. Provide caution tape and/or locked entryways during paint removal activities in existing buildings to prevent access to the work area from unauthorized personnel.
- B. Provide "Wet Paint" signs to protect newly-painted finishes. Remove temporary protective wrappings provided by others for protection of their Work after completion of painting operations.
- C. At the completion of Work of other trades, touch-up and restore all damaged or defaced painted surfaces as directed by Commissioner.

END OF SECTION

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SECTION 102113

METAL TOILET COMPARTMENTS

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Toilet and Bath Accessories: Section 102813.

1.02 SUBMITTALS

- A. Shop Drawings: Show fabrication details and connections to adjacent work.
- B. Product Data: Catalog sheets, specifications, and installation instructions for the following:
1. Panels and Doors.
 2. Pilasters, types specified.
 3. Hardware and accessories.
- C. Samples:
1. Hardware: One, each item and type specified.
 2. Panels: One 12 inch square corner section.
 3. Pilaster Leveling Device: One complete device, including pilaster shoe.
 4. Overhead Bracing: One 12 inch long section.
 5. Bracket Fittings: One each type.
 6. Fasteners: One each type.
 7. Color Samples: Manufacturer's standard colors for specified finish.

1.03 PROJECT CONDITIONS

- A. Do not install the Work of this Section until after the floors, walls, and ceilings of the spaces to receive the Work are completed.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Sheet Steel: ASTM A 591, galvanized-bonderized, of the following minimum thicknesses.
1. Pilasters (Overhead Braced): 20 gage.
 2. Pilasters (Unbraced): 16 gage.
 3. Panels (Partitions): 20 gage.

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4. Doors: 22 gage.
 5. Concealed Reinforcing for Anchorages: 12 gage.
 6. Concealed Reinforcing for Tapping: 14 gage.
- B. Core Material: Corrugated paperboard formed of panels weighing approximately 34 pounds per 1000 square feet or kraft paper weighing not less than 25 pounds per 1000 square feet formed into a hexagonal honeycomb pattern containing cells of approximately one inch size.
- C. Pilaster Shoes; One for each Pilaster: AISI Type 302/304, 20 gage stainless steel, 3 inches high, finish to match hardware.
- D. Stirrup Brackets: Non-ferrous alloy with satin chrome finish.
- E. Hardware and Accessories: Heavy duty operating hardware and accessories, non-ferrous cast alloy with satin chrome finish, unless otherwise specified.
- F. Fasteners: Minimum 1/4 inch diameter machine bolts with tamper resistant heads; finished to match hardware.

2.02 FABRICATION

- A. Panels: Pressure laminate face sheets to core, form edges by lapping or seal edges with continuous locking strip. Miter and weld corners, with welds ground smooth, or cap with stainless steel clips.
1. Panel Thickness: One inch.
 2. Provide cut-outs, with concealed reinforcing, as required for hardware. Edge cut-outs and finish exposed edges to match remaining uncut edges.
 3. Provide concealed steel or wood reinforcing for installation of hardware, fittings, brackets, and required accessories. Spot weld steel reinforcing in place. Permanently adhere wood reinforcing in place.
 4. Fabricate panels for thru bolt fastening at fittings, brackets, stops and keepers, channels, and other locations indicated on the Drawings.
 5. Where grab bars are indicated reinforce panels for attachment of grab bars.
 6. Provide cut-outs, with concealed reinforcing, as required for convactor covers, pipes, and other obstructions which interfere with pilasters or

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panels. Edge cut-outs and finish exposed edges to match remaining uncut edges.

- B. Doors: One inch thick units, size as indicated, of same construction and finish as panels.
- C. Ceiling-Hung Pilasters: 1-1/4 inch thick units, of same construction and finish as panels, with galvanized steel anchorage devices for securing to overhead support.
- D. Floor-Supported Pilasters: 1-1/4 inches thick units, of same construction and finish as panels, with galvanized steel anchorage complete with threaded rods, lock washers, and leveling nuts.
- E. Overhead-Braced Pilasters: 1-1/4 inches thick units, of same construction and finish as panels, with galvanized steel floor supports and leveling bolts.
 - 1. Overhead Brace: Continuous extruded aluminum tube, anti-grip design with clear anodized finish. Set and secure brace into top of each pilaster.
- F. Hardware and Accessories; One set for each Door:
 - 1. Hinges: Heavy duty gravity type, recessed top and bottom door assemblies and clamp flange jamb brackets thru bolted to pilaster. Stainless steel door pivot pin operating in upper hinge bronze or nylon bushing, opposing cam action unit in lower portion. Hinges adjustable to permit door to remain stationary at any desired angle.
 - 2. Mortise Lock: Stainless steel, thumb turn control inside, tool operated slotted rosette outside for emergency access.
 - 3. Combination Stop and Keeper: Clamp flange type, with securely attached rubber bumper.
 - 4. Combination Coat Hook and Bumper: Manufacturer's standard unit, rubber tipped.
 - 5. Door Pull (for doors opening out): Chrome plated or stainless steel.
 - 6. Wall Bumper (for doors opening out and striking adjacent wall at 90 degrees): Ives No.406 or Glynn-Johnson No. 50W rubber dome with concealed fastener.
- G. Factory Finish: One coat of rust resisting primer and two finish coats of baking enamel applied to steel surfaces.
 - 1. Color: As selected from the manufacturer's standard colors.

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PART 3 EXECUTION

3.01 INSTALLATION

- A. Install Work of this Section in accordance with the manufacturer's printed instructions, except as otherwise indicated or specified.
1. Use thru bolt fasteners at brackets, stops and keepers, channels, and other locations indicated on the Drawings.
 3. Position door bumpers at proper locations to prevent door from striking adjacent wall or panel.
 4. Fasten pilaster shoes to pilasters with one fastener on each side.
- B. Set units with no more than 1/2 inch between pilasters and panels, and no more than one inch clearance between panels and walls.
- C. Tolerances: Maximum variations from plumb in the lines and surfaces of the Work of this Section shall be 1/8 inch in any 5 feet.

3.02 ADJUSTING

- A. Adjust leveling devices, door hardware, and other operating parts for smooth operation.
1. Set hinges of in-swing doors to hold doors open approximately 35 degrees from the closed position when unlatched.
 2. Set hinges of out-swing doors to return to the fully closed position.
 3. Lubricate hardware for proper operation.

3.03 CLEANING

- A. Clean exposed surfaces and touch up minor finish imperfections using materials and methods recommended by the manufacturer.

END OF SECTION

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SECTION 102813
TOILET AND BATH ACCESSORIES

PART 1 GENERAL

1.01 SUBMITTALS

- A. Product Data: Specifications or data sheets and installation instructions for each product required.
- B. Contract Closeout Submittals: Furnish the following, as applicable, for each product required:
 - 1. Operation and maintenance data.
 - 2. Parts list.
 - 3. Keys and tools.

1.02 QUALITY ASSURANCE

- A. Provide products from more than one manufacturer if necessary to meet the requirements of this Section.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products in manufacturer's original protective packaging.
 - 1. Furnish items with protective wrappings or covers as required to protect finishes. Do not remove protective coverings until completion of other Work liable to damage accessory finish.
- B. Pack products with required trim, mounting devices, fasteners, service tools or keys, and complete installation instructions.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Sheet Steel: Cold rolled, commercial quality, ASTM A 366.
 - 1. Galvanized: Zinc coated, ASTM A 123.

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- B. Mounting Devices and Fasteners: Stainless steel, unless otherwise indicated.

2.02 FABRICATION

- A. Equip units with keyed vandal-resistant lock where key access is specified.
- B. Mounting Devices: If not indicated, furnish type and size compatible with accessory unit specified which will securely mount accessory to wall or partition construction indicated.
1. Grab Bars: Furnish anchoring devices which will withstand minimum downward pull of 500 pounds.
- C. Exposed Mounting Devices and Fasteners:
1. Type: Theft-resistant.
 2. Finish: Match accessory finish, unless otherwise indicated.
 3. Masonry Construction: Furnish stainless steel machine screws in nonferrous expansion anchors except furnish stainless steel toggle bolts where anchorage occurs in masonry cavities.

2.03 KEYS AND TOOLS

- A. Keys: Furnish minimum of 2 keys and an additional 2 keys for every 6 key operated accessories.
1. Key similar key access units alike unless otherwise specified.
- B. Tools: Furnish socket wrenches compatible with set screws of concealed theft-resistant fastenings. Furnish minimum of 2 wrenches and an additional 2 wrenches for every 6 accessories having such fastenings.

2.04 MIRRORS

- A. Types:
1. Type A-S: Polished tempered glass mirror in stainless steel frame with integral shelf.
- B. Size: Unless otherwise indicated, furnish mirror units with overall frame size 18 x 24 inches.

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- C. Mirror Frame and Hanger Assembly: Furnish the following for mirror Type A-S.
1. Frame: One of the following options:
 - a. Angle Framed Construction: Stainless steel angle frame with No. 4 finish, minimum 5/8 x 5/8 inch x 18 gage, corners mitred, heliarc welded, ground smooth and polished, with concealed 18 gage stainless steel angles welded on inner side of frame 6 inches oc and tapped to receive back plate fasteners. Mirror shall be centered in the frame and held in place with shock absorbing cushion at each edge. Bottom of frame shall have 2 holes for access to locking devices.
 2. Back Plate: One of the following options:
 - a. Galvanized steel, 20 gage, full interior area of frame, secured to frame with stainless steel tabs on frame folded into place.
 3. Mounting Frame (Hanger Bracket): One of the following options, with 3/16 inch cadmium plated steel wall fasteners of type and length to suit wall construction:
 - a. Box or rectangular type, welded construction, fabricated of 18 gage galvanized steel, with four 18 gage locking tabs located to align with slots and locking devices on back plate. Mounting frame shall have 4 holes, one near each locking tab, for fastening frame to wall.
- D. Type A-S Mirrors: No. 1 or mirror quality polished float/plate tempered glass, 1/4 inch thick. Two coats of silver shall be factory-applied on the glass, followed by one coat of electrically deposited copper on the silver. Finish mirror back and apply a thick protective coat of heavy waterproof paint.
1. Identification Stamp: Identify tempered glass units by affixing manufacturer's stamp labeled "tempered" to glass face.
 2. Mirror Backing: Shock absorbing material over entire back mirror surface.

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2.05 SHELVES

- A. Stainless Steel Shelf: 18 gage stainless steel one-piece top with minimum 1/2 inch return flange on all 4 sides and front hemmed; exposed 16 gage stainless steel angular gusset brackets with two 3/16 inch diameter mounting holes per bracket; all welded construction. Locate brackets 3 inches from each end of shelf. Furnish shelves 5 inches wide by 18 inches long unless otherwise indicated.

2.06 PAPER TOWEL DISPENSERS - SURFACE MOUNTED (PTD-SM)

- A. Units fabricated of 22 gage stainless steel and designed to dispense multifold or C-fold towels. Approximate cabinet size: 10 inches wide x 15 inches high x 4 inches deep. Hinge front at bottom with a full length, continuous stainless steel hinge. Units shall have key access at top of front and integral refill indicator in front face or side. Fabricate units with flush, tight seams and joints, rounded corners, sloping tops and all exposed edges rolled.

2.07 SINGLE ROLL TOILET TISSUE DISPENSERS (SRTTD)

- A. Fabricate units to accommodate standard 4-1/2 inch wide core tissue roll up to 5 inch diameter. Units shall have heavy duty internal spring in metal roller to securely hold tissue roll within holder.
1. Surface-mounted Units: Post type with concealed mounting, constructed of stainless steel with polished satin finish on exposed surfaces. Support posts shall be 22 gage, one-piece construction with locking set screw on bottom of each post. Finish metal roller to match posts. Provide heavy duty stainless steel concealed mounting brackets.

2.08 WASTE RECEPTACLES - RECESSED (WR-R)

- A. Units fabricated of 22 gage stainless steel with cabinet access door, and removable and reusable metal or rigid molded plastic waste container equipped with lifting handle. Fabricate door of 22 gage stainless steel double-pan, or 18 gage stainless steel single-pan, construction. Mount door on full length, continuous stainless steel

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hinge. Approximate overall size: 48 inches high x 14 inches wide x 7 inches deep. Minimum capacity of waste container: 1.3 cu ft. Units shall have integral trim flange and key access.

2.09 FEMININE NAPKIN DISPOSALS - SURFACE MOUNTED (FND-SM)

- A. Units fabricated of 22 gage stainless steel with 22 gage stainless steel sloping cover mounted on a full length, continuous stainless steel hinge. Equip cover with a side mounted handle for lifting. Approximate overall size: 11 inches high x 8 inches wide x 4 inches deep. Design disposal to be emptied by a door at bottom, mounted on a full length, continuous stainless steel hinge and equipped with a hidden snap latch. Fabricate back for 3 or 4 point fastening to wall.

2.10 LATHER SOAP DISPENSERS - SURFACE MOUNTED (LSD-SM)

- A. Individual surface mounted type consisting of a removable clear glass or clear polyethylene soap container enclosed in a satin finish chromium plated brass or steel case with push-in lather dispenser valve, locked filler cap at top, and separate concealed wall plate for theft-resistant mounting. Soap container capacity: Not less than 12 oz. Valve shall be located above soap level and shall have a self cleaning piston. Fabricate valve and all moving parts of stainless steel. Units shall have viewing slots on both sides of dispenser, filler cap permanently chained to dispenser body, and service key access for refilling.

2.11 TOWEL HOOKS (TH)

- A. Towel pin extending approximately 3-1/2 inches from wall and flange approximately 2 x 2 inches, fabricated of chromium plated heavy forged brass or heavy gage stainless steel. Units shall have heavy duty concealed back plate and theft-resistant fastening.

2.12 GRAB BARS (GB)

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- A. Grab bar assemblies consisting of stainless steel tubing with integrally welded mounting flanges secured to concealed tenon plates with theft-resistant fasteners, and complying with the following requirements:
1. Tubing: Stainless steel, 1-1/2 inch od x 18 gage wall thickness. Bend tubing at each end and join to flanges by concealed welding. Total projection from wall line (including bar diameter): 3 inches.
 2. Flanges: Stainless steel, 3 inch diameter, 11 gage wall thickness, not less than 1/2 inch deep.
 3. Finish: Brush satin finish, unless otherwise indicated.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Unless otherwise indicated, install Work of this Section in strict accordance with the manufacturer's instructions.
1. Install all attachments, anchorage devices, and fasteners as required to securely mount accessory units to types of wall or partition construction indicated.

3.02 CLEANING AND POLISHING

- A. Remove protective wrappings from installed accessories after completion of other Work liable to damage accessory finish. Remove residue, if any, and polish exposed surfaces.

END OF SECTION

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SECTION 13 48 13
ACOUSTICAL PANEL SYSTEMS

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

- A. This section includes the fabrication of acoustical panels that when erected in accordance with the manufacturer's shop drawings to create the Acoustical Barrier System as shown on the drawings.

1.02 REFERENCES

- A. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- B. ASTM A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
- C. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
- D. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
- E. UL - Fire Resistance Directory and Building Material Directory.

1.03 SUBMITTALS

- A. Product Data: Manufacturer's complete and current product data for each product required, including complete installation requirements.
- B. Quality Control Submittals:
1. Certification: Manufacturer's written statement, certifying that the suspension system meets or exceeds the specified structural requirements.

1.04 DESIGN REQUIREMENTS

- A. Structural: The entire enclosure shall be designed by the manufacture to be self supporting. Where wall

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loadings require additional structural strength, it shall be provided by heavier panel skins, additional internal longitudinal reinforcing members, and/or additional structural members. The assembled structure shall not exhibit any panel joint deflections in excess of $L/200$, where L is the unsupported span length of any panel section within the completed enclosure.

B. Acoustical:

1. The manufacturer shall provide certified testing data obtained from an acoustical laboratory, listing sound absorption and transmission loss characteristics of the enclosure. When requested by the engineer, the manufacturer shall arrange to have a copy of all pertinent acoustical laboratory reports forwarded directly from the laboratory to the engineer.
2. The supplier of the Panels shall provide certified test data from an accredited independent Acoustical Laboratory giving sound absorption characteristics of the panels. When tested in accordance with ASTM C423 sound absorption coefficients shall not be less than:

Frequency, Hz	125	250	500	1000	2000	4000
Coefficient	.20	.50	.70	.90	.70	.60

3. The sound transmission loss values of the panel shall be tested in accordance with ASTM E90 and shall not be less than:

Frequency, Hz	125	250	500	1000	2000	4000
Transmission Loss, dB	20	25	35	45	50	50

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical units and framing system components to the Project Site in original, unopened packages and store them in a fully enclosed space protected against damage from moisture, direct sunlight, surface contamination, and other causes.

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- B. Open ends of acoustical unit packages 24 hours before installation to stabilize moisture content and temperature.
- C. Handle acoustical units carefully to avoid chipping edges or damaging units in any way.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable manufactures of the acoustical panels are as follows:
 - 1. **Industrial Acoustical Company**
(Rep. - Albert Weiss Products, Inc.
270 Madison Ave, New York, NY 10016
Phone: 212-679-8550)
 - 2. **VAW Systems**
(Rep. - Kane-Davey Associates, Inc.
2 Schooner Lane, Unit 12, Millford, CT 06460
Phone: 203-255-1354)
 - 3. **Vibro-Acoustics**
(Rep. - Metro Air Products
111 Omni Drive, Hillsborough, NJ 08844
Phone: 908-431-5556)
 - 4. **McGill AirSilence LLC**
2400 Fairwood Ave, Columbus, Ohio 43207
Phone: 614-829-1200

2.02 PANEL CONSTRUCTION

- A. All barrier wall panels shall be 4 inches thick, as noted on the drawings with a solid galvanized steel exterior shell and a perforated interior galvanized steel shell.
- B. The outer and inner shells shall be tack or spot welded to the perimeter and internal longitudinal steel channels and box internal closures, in such a manner and spacing that the panel assembly will not fail at

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the maximum operating loads specified in Design Requirements.

- C. The outer shell shall be constructed of galvanized steel with a minimum 16-gage thickness.
- D. The inner shell shall be constructed of galvanize perforated steel with a minimum 22-gage thickness. Perforations shall be 3/32" round holes, 3/16" on center providing approximately 28% open area.
- E. All perimeter and internal longitudinal steel channel members shall be constructed of ASTM A653 commercial-quality galvanized steel with a minimum 18 gage thickness.
- F. All steel panel surfaces, internal channels, and trim items shall be fabricated from zinc-coated steel with a dipped galvanized coating (minimum G-60 coating with class as determined by ASTM A924) and shall meet all requirements of ASTM A653 for commercial quality galvanized carbon steel.
- G. Panels shall have a tongue and groove joint construction.
- H. Panel shall be completely metal enclosed with interior cavity completely filled with acoustic grade fiberglass as described below:
 - 1. Media shall be incombustible, inert, acoustic quality, shot-free acoustic grade fiberglass with long, resilient fibers bonded with a thermosetting resin. Fiberglass density shall be as required to insure conformance with laboratory test data. Fiberglass shall be packed with a minimum of 5% compression during panel assembly. Media shall be bacteria, mildew, and fungus resistant and vermin proof, resilient such that it will not crumble or break, and conforming to irregular surfaces. Media shall not cause or accelerate corrosion of aluminum or steel. Mineral wool will not be permitted as substitute for fiberglass.
 - 2. No insulating materials shall be used that have a flame spread greater than 25 or a smoke developed greater than 50.
- I. All materials shall be listed and labeled by Underwriters Laboratories Inc for fire hazard classification.

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PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates and structural framing scheduled to receive the barrier wall system for compliance with requirements specified. Do not install the Work until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. Install the panels to create the acoustical wall barrier as indicated on the drawings. Installation shall be in accordance with the manufacturer's shop drawings and recommendations. Verify the dimensions in field prior to fabrication.
- B. All base channels shall be installed on the leveled parapet. Spacing of the base channel attachments shall be as outlined in the manufacture's standard details of assembly.
- C. The perforated side of the acoustical panels shall be facing the Chiller Unit.
- D. All assembly trim items shall be constructed of hot-dipped galvanized steel (minimum 18 gage thickness) and furnished in standard lengths to be field cut to the required dimensions. Spacing of sheet metal screws, application of sealant and position of trim shall be in accordance with the manufacturer's published erection and installation details.
- E. Joint and trim shall be sealed with waterproofing sealant that is neoprene-phenolic mastic formulated to withstand temperatures from -20°F to +300°F. Sealant shall be formulated such that surface preparation of solvent cleaning is not necessary.

3.03 CLEANING AND ADJUSTING

- A. Comply with manufacturer's printed instructions for cleaning and touch-up of minor finish damage.

END OF SECTION

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A. MANUFACTURER:

Company with not less than 3 years of experience in the design, fabrication and assembly of vertical platform lifts.

B. SUBCONTRACTOR QUALIFICATIONS

1. Skilled tradesmen must be employees of the installing contractor approved or trained by the lift manufacturer, with demonstrated ability to perform the work on a timely basis.

C. REQUIREMENTS OF REGULATORY AGENCIES

1. Fabrication and installation work shall be in compliance with applicable jurisdiction authorities.

2. File shop drawings and submissions with NYC DOB. Company pre-inspection and jurisdictional authority inspections and permits are to be made on timely basis as required.

D. SUBMITALS

1. Shop drawings shall show a complete layout of lifting equipment detailing dimensions and clearances as required.

2. The Contractor shall provide physical samples of all items requiring selection of color or finish.

1.05 MAINTANANCE

A. The lift shall be cleaned regularly and inspected at intervals no longer than every 6 months.

1.06 WARRANTY

A. The Contractor shall provide three (3) months guarantee from date of substantial completion. The entire lift and all component parts shall carry a one (1) year warranty. The warranty shall be for the replacement, at no cost, of defective parts and shall include labor required to replace the defective part or parts.

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SECTION 142420
HYDRAULIC VERTICAL PLATFORM LIFT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, General Conditions, and Specification Sections apply to work of this Section.

1.02 DESCRIPTION

- A. Work described in this section includes providing equipment, incidental material and labor required for complete, operable hydraulic platform lift installation. Lifts shall be erected, installed, adjusted, tested and placed in operation by lift system manufacturer, or manufacturer's authorized installer and as follows:

1. Lifts shall be in accordance with the ASME A18.1.
2. Vertical platform lift consisting of an hydraulic tower with a lifting platform and an aluminum enclosure with tempered glass inserts.

Install lift in compliance with NEC-2008, ASME A18.1-2005, ANSI A117.1-2003 and 2010 ADA Standards.

1.03 PREPARATORY WORK

- A. Prior to the lift installation Contractor shall provide the following:
1. Permanent 120 VAC 20 amp single phase power to operate lift to be provided from a lockable fused/cartridge type disconnect switch with auxiliary contacts for battery operation. Refer to drawings for permanent power specifications and location of disconnects. Temporary power may be provided to expedite installation of lift.
 2. Provide a plumb and square hoistway with smooth interior surfaces, including fascias or furring of the hoistway interior.
 3. Provide rough openings per contractor's shop drawings.

1.04 QUALITY ASSURANCE

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PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Savaria hydraulic vertical platform lift, Model V-1504-LUX. (Basis of Design)
- B. Bruno Independent Living Aids, Inc.
- C. Lift-U (Div. of Hogan Mfg., Inc)

2.02 CHARACTERISTICS

- A. Rated Load: 750 lb (340 kg).
- B. Rated Speed: 25 fpm (0.11 m/s).
- C. Car Dimensions:
 - 1. 36 inches W by 54 inches D (914 mm by 1371 mm) - Standard.
- D. Levels Serviced: 2.
- E. Car Configuration:
 - 1. Front/Rear Exit.
- F. Travel: 1-3/4 feet. Maximum of 14' in US.
- G. Pit Depth:
 - 1. 0" - Fixed Ramp Required.
- H. Installation Environment
 - 1. Indoor (interior install).
- I. Powder Coat Finish
 - 1. Almond Beige - Standard.
- J. Operation: Constant pressure.
- K. Power Supply: 120 Volt, 20 Amp, 1 Phase, 60 Hz.
- L. Drive System: 2:1 Roller Chain Hydraulic.
- M. Emergency Power:
 - 1. Battery Operation in Down Direction - Standard.
- N. Controller: Electronic - Free Relay Logic.

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- O. Motor/Pump: 1.5 HP (170 KW), Gear Type.
- P. Manual Lowering: Outside the hoistway at lower landing.
- Q. Car Enclosure: Side Guards of platform shall have a steel cladding and shall be at a minimum of 42" above the upper landing.
- R. Doors and Gates:
 - 1. No Platform Gate required, allowing for ease of operation.
 - 2. First Landing Door:
 - a. Door Type: 64" X 36" wide, with steel frame and tempered glass inserts and shall be equipped with interlock, hydraulic closer and kick plate. The inside kick plate shall be made of still.
 - 3. Upper Landing Gate: 42"H X 36"W, with steel frame and tempered glass inserts and shall be equipped with interlock, spring hinges and kick plate.
 - 4. Lift shall have manufacturer's standard non-skid flooring.
 - 5. Doors and gates shall be flush-mounted to avoid pinch points and shear hazards.
 - 6. Handrail: A single handrail, with a 1-1/2" Diameter and with both ends returned to the side guard shall be located on the control wall of the carriage.
 - 7. Call Stations: Provide flush, surface or door frame mounted landing call/send stations.
 - a. Call Stations will be: Keyed (removable in On/Off position).
- S. Car Operation:
 - 1. Car Operating Panel shall consist of constant pressure buttons, emergency stop/alarm button, on/off key switch (when applicable) and emergency LED light mounted on a removable stainless steel panel (Type 304 #4 Stainless Steel Finish).
- T. Pumping Unit and Control:
 - 1. The pumping unit and control shall be enclosed in the tower. The controller and pump unit shall be pre-wired and tested prior to shipment. The controller is to be relay logic based operation for

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ease of maintenance and service. Pump unit shall incorporate the following features:

- a. Adjustable pressure relief valve.
- b. Manually operable down valve to lower lift in the event of an emergency. This valve shall be activated from outside of the hoistway through a keyed box.
- c. Pressure gauge isolating valve, manually operable.
- d. Gate valve to isolate cylinder from pump unit.
- e. Electrical solenoid for down direction control.

2. Emergency Operation - A manual lowering device shall be located outside the hoistway in a lockable box positioned at a lower landing.

U. Cylinder and Plunger:

1. The cylinder shall be constructed of steel pipe of sufficient thickness and suitable safety margin. The top of the cylinder shall be equipped with a cylinder head with an internal guide ring and self-adjusting packing.
2. The plunger shall be constructed of a steel shaft of proper diameter machined true and smooth. The plunger shall be provided with a stop electrically welded to the bottom to prevent the plunger from leaving the cylinder.

V. Roller Chains: Two No.50 roller chains with 5/8 inch (16 mm) pitch. Minimum breaking strength 6100 lb (2773 kg) each.

W. Leveling Device:

1. The lift shall be provided with an anti-creep device which will maintain the carriage level within 1/2 inch (12 mm) of each landing.
2. All limit switch and leveling device switches shall be located in a position to be inaccessible to unauthorized persons. They shall be located behind the mast wall and be accessible through removable panels.

X. Guide Yoke: The 2:1 guide yoke/sprocket assembly shall be supplied with idler sheaves, roller guide shoes,

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bearings and guards.

- Y. Terminal Stopping Devices: Normal terminal stopping devices shall be provided at top and bottom of runway to stop the car positively and automatically.
- Z. Guide Rails and Brackets: Steel 'C' guide rails and brackets shall be used to guide the platform and sling. Guide rails shall form part of the structural integrity of the unit and be integral to the mast enclosure, ensuring stability and minimum platform deflection when loaded.
- AA. Car Sling: Car sling shall be fabricated from steel tubing 44 inches (1116 mm) high with adequate bracing to support the platform and car enclosure. Roller guide shoes shall be mounted on the top and bottom of the car sling to engage the guide rails. Guide shoes shall be roller type with 3 inches (76 mm) diameter wheels.
- AB. Wiring: All wiring and electrical connections shall comply with applicable codes. Insulated wiring shall have flame-retardant and moisture-proof outer covering and shall be run in conduit or electrical wire ways if located outside the unit enclosure. Quick disconnect harnesses shall be used when possible.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. All site dimensions shall be taken to ensure that tolerances and clearances have been maintained and meet local regulations.

3.02 PREPARATION

- A. Pre-inspect the construction and service requirements. For These requirements will be included in drawings, diagrams, engineering data sheets and special instructions before the work begins.

3.03 INSTALLATION

- A. Install all the components of the lift system that are specified in this section to be provided, and that are

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required by jurisdictional authorities to license the lift.

- B. Trained employees of the Contractor shall perform all installation work of this section.
- D. Adjust lift for proper operation and clean unit thoroughly.
- E. Instruct users in operation, trouble-shooting and maintenance procedures.

END OF SECTION

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SECTION 14 24 23
HYDRAULIC PASSENGER ELEVATOR

PART 1 - GENERAL

1.1 DESCRIPTION - GENERAL

A. Related Documents: The general provisions of the contract including Bidding Requirements, General and other Conditions and Specification Requirements apply to all work of this section.

1.2 WORK INCLUDED

The work of this section consist of furnishing all labor, material, equipment and appliances necessary and required by the contractor to install one new hydraulic passenger elevator. Work shall include but not be limited to the following:

A. INSTALL ONE NEW HYDRAULIC PASSENGER ELEVATOR

1. A new microprocessor-based controller.
2. Provide battery powered emergency elevator lowering system.
3. Provide new hydraulic power unit.
4. Provide and install dual jack holeless elevator equipment including jack assemblies and all necessary supporting equipment.
5. Provide a sling and platform (with nickel silver sill).
6. Provide guide assemblies.
7. Provide a cab with doors, door operators, sub flooring, finish flooring, exhaust fan, car station, car lantern, car position indicator etc.
8. Provide guide rails.
9. Provide hoistway entrance frames and associated accessories including rollers, tracks, interlocks, door closers and hangers. Provide hoistway door panels with all accessories at each opening.

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10. Provide car buffer with footing steel.
11. Provide hydraulic pipe line with fittings and supports as necessary.
12. Provide hydraulic oil.
13. Provide rupture valve.
14. Provide scavenger pump system with plastic tubing connecting hydraulic jack oil ring to oil tank in machine room.
15. Provide traveling cable.
16. Provide corridor push-button stations, corridor position indicator, and Fire Fighters' key switch. All pushbuttons shall be installed at appropriate height conforming to ADAAG requirements and all other applicable codes.
17. Provide hands-free autodial telephone incorporated into the main car operating panel. Provide communications between the elevator machine room and the elevator car. Communications must also be provided between the car and a location in the building readily accessible to authorized and emergency personnel as per section 2.27.1.1.1 of A17.1 as modified by Appendix K of the 2008 NYC Building Code.
18. Provide shielded communication wiring to all locations for the communications devices as described above.
19. Provide metal tape with magnetic strip type floor selector and landing device.
20. Provide hoistway switches and elevator pit stop switch.

Provide the following feature for the elevator.
 - a. Independent Service.
 - b. Inspection Service.
 - c. Firefighters' Emergency Operation.
21. Connect smoke detector system to the elevator Fire Fighters' feature.
22. Provide hoistway and machine room wiring, in conduit as per NEC code.

1.3 RELATED ITEMS PROVIDED IN OTHER SECTIONS

1. Construction Facilities and Temporary Controls: protection of floor openings and barriers; temporary power and lighting. personnel
2. Earthwork: excavation for elevator pit.
3. Cast-In-Place Concrete: elevator pit / waterproofing.
4. Unit Masonry: masonry hoistway enclosure, building-in and grouting hoistway door frames, grouting thresholds.
5. Metal Fabrications: support for entrances and rails, hoisting beam at top of hoistway (See Drawing).
6. Provide and install hoistway ventilation at the top of the hoistway to conform to code requirements (3 ft.² required).
7. The machine room shall be provided with ventilation to the outside air.
8. Provide air conditioning to maintain temperature in machine room between 55 degree F and 90 degree F.
9. Provide new pit ladder extending 48" minimum above sill of pit entrance door.
10. Provide a fused disconnect switch or circuit breaker for elevator power per the National Electrical Code with feeder or branch wiring to controller. Size to suit Elevator power requirement. An auxiliary contact shall be provided in the disconnect switch to provide a signal to the battery powered emergency lowering device.
11. Provide a separate 120 volt, A.C. 15 amp, single phase power supply with fused disconnect switch for the elevator cab lighting.
12. Provide electrical power for all elevator related accessories such including sump pump, machine room AC, machine room light, GFI receptacles, pit light, machine room ventilation system, scavenger pump and spare.

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13. Provide an electrical outlet (GFI) and light fixture in pit with switch located adjacent to the access ladder per code.
14. Provide smoke sensing devices, located as required in elevator lobby and machine room with wiring from the sensing devices to elevator controller.
15. Provide dedicated telephone line service up to elevator machine room for elevator emergency cab communication system.
16. Provide zero clearance elevator pit sump pump with power supply, oil separator, and accessories per MEP design.
17. Provide sprinkler in elevator pit.

1.4 REFERENCES

- A. National Electrical Manufacturer Association (NEMA).
- B. American Society for Testing and Materials (ASTM).
- C. American National Standards Institute (ANSI).
- D. Underwriters Laboratories, Inc. (UL).
- E. National Elevator Industry, Inc. (NEII).
- F. American Society of Mechanical Engineers (ASME).
- G. American National Standard Safety Code for Elevator and Escalators. ASME A17.1 and A17.2 latest edition.
- H. New York State Code and Local Codes.
- I. NYC Building Code.
- J. National Electrical code (NEC).

1.5 DEFINITIONS

Company Field Advisor: An employee of the company which lists and markets the primary components of the elevator under their names who is certified by the company to be technically qualified in design, installation and servicing of the

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required products, or an employee of an organization certified by the foregoing company to be technically qualified in design, installation and servicing of the required products.

1.6 MANUFACTURE AND INSTALLATION OF EQUIPMENT

- A. All elevator equipment required under the contract shall be of the highest grade, smooth, and safe in operation, of individuals, firms and corporations, who have been engaged in business or manufacturing of the elevator equipment of similar type, speed, capacity and design as herein specified, for at least a period of 3 years immediately prior to the date of award of the Contract. The successful bidder shall submit a list of projects on which he has performed the installation of elevator equipment of the same kind, type, speed, capacity and operation as that specified herein which have been in satisfactory operation for a period of at least three years.

Furthermore, the organization performing the elevator work shall give satisfactory evidence that it has maintained and operated in City of New York and immediate vicinity, a servicing organization capable of promptly servicing, repairing and replacing equipment and materials of elevator installations of the same type and capacity.

1.7 FIELD MEASUREMENTS

- A. The Contractor shall verify dimensions and conditions at the job during construction so that all work will properly function and meet the required code.
- B. The Contractor, before commencing work shall examine all adjoining work area on which his work is in any way dependent for perfect workmanship according to the intent of the specifications.

1.8 SUBMITTALS

- A. Within 20 days after the award of the contract, the Contractor shall furnish to the Commissioner the names and addresses of the manufacturers, together with catalog information or other identifying description for all items specified in the specification.

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B. The contractor shall submit drawings and other submittals e.g. catalog cuts, charts, graphs, computations, etc. within 30 days of award of the contract. The shop drawings shall show material type and gauge, general dimensions, methods of attachment, location and size of reinforcements and openings, and a general arrangement of components. Matter submitted for approval shall be accompanied by complete information concerning the material, articles and/or design proposed for use in sufficient detail to show compliance with the specification, and use in sufficient detail to show compliance with the specification, and shall be approved before incorporation into the work. Approval thereof will not be construed as relieving the Contractor of compliance with the specification, even if such approval is made in writing, unless the attention of the Commissioner is called to the noncompliance features by letter accompanying the submitted matter. Approval of drawings, cuts and samples by the Commissioner shall not be construed as a complete check or approval of the detailed dimensions, weights, gauges and similar details of the proposed articles. The conformance of such details with the contract requirements, together with the necessary coordination of dimensions and details between the various elements of the work, and between the various subcontractors and suppliers, shall be solely the responsibility of the contractor, approval of submitted matter notwithstanding. All submitted material shall be tendered complete, and at one time. PARTIAL SUBMITTALS WILL NOT BE CONSIDERED. No work shall be started before written approval is received. In general, the items to be submitted shall include but shall not be necessarily limited to the following:

1. Complete and fully dimensioned hatch plan, machine room and sections of hatch plan (i.e. elevation) including pit depths, car run-by, equipment sizes, etc. Contract plans (from bid package) shall not be used for filing purposes.
2. Schedule of work showing commencement and completion dates.
3. Work schedule breakdown of elevator to be installed, showing construction sequence and allotted time in calendar weeks.
4. Written description of the mode and sequence of operation

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5. Complete information on elevator control system.
 6. Interior elevations and details of elevator car enclosures, details of car operating and signal fixtures including metal gauges, dimensions, hinge details, finishes, etc.
 7. Hoistway and car door panel drawing showing type and size with plan view and section view.
 8. Complete fixtures for cab and corridors.
 9. Detail of all elevator components including platform, car frame, pump unit, piston-cylinder assembly, landing device, hydraulic line with components, etc.
 10. Straight line diagrams of all control, operating, signal and other circuits with wire sizes and necessary cuts and other data on the several relays, switches and other devices.
 11. Conduit layouts showing sizes and runs of conduits with number and size of wires in each.
 12. Samples of all finishes.
 13. Samples of conduit, fittings, wires, devices and traveling cables.
 14. Complete information on all components required for the cab communication system including a description of the mode and operational features.
- C. Approval of drawings, schedules and other submitted matter will be general and shall not be construed as:
1. Permitting any departure from the contract requirements.
 2. Relieving the Contractor of the responsibility for any errors, including details, dimensions, materials:
 3. Approving departures from details furnished by the Commissioner.
- D. If drawings, schedules or other submitted matter shows variations from the contract requirements, the Contractor shall describe such variations in his letter

of transmittal. If acceptable, the Commissioner may approve in writing, any or all such variations. If the Contractor fails to describe such variations, he shall not be relieved of the responsibility for executing the work in accordance with the contract, even though which drawings or schedules may have been approved.

- E. Submissions, which are disapproved, shall be resubmitted with two weeks with all revisions circled and annotated with the appropriate revision number.
- F. Samples: Where submissions are called for in the specifications, or when otherwise required by the Commissioner, the Contractor shall submit duplicate samples of materials, appliances, finish or other items included in the work. Such samples shall be approved by the Commissioner before the work is executed. Samples shall be submitted in ample time before work is installed, to permit sufficient time for Commissioner's consideration. Samples shall be accompanied by a label, or shall be properly marked, indicating the type and brand of material, its place of origin, the name of the producer, the Contractor's name and the name of the project for which the material is intended.

1.9 MANUFACTURE AND INSTALLATION OF EQUIPMENT

- A. Quality: Materials and products shall be the best for each type or class. They shall be new, sound, uniform in quality, size, shape, texture and color, as each case may require, and free from cracks, warping and other defects which might impair their strength, appearance, performance, durability or service ability.
 - 1. Materials and products shall be of those manufacturers having established reputations for products, which are of high quality, are practical and durable, and require minimum of maintenance. Manufacturer shall have ample facilities for producing and delivering to meet construction schedules.
 - 2. The Contractor shall unload, haul, and pile material delivered for the project and shall assume all responsibility for insurance, coverage, care and protection of same after unloading.

1.10 REQUIREMENTS

- A. The completed elevator installation shall conform to

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ASME A17.1 and ASME A17.2 as modified by the NYC Building Code except as specifically otherwise indicated or specified. All material and equipment shall be new unless otherwise specified and indicated. Equipment shall be the product of a manufacturer regularly engaged in the manufacture and installation of this type of equipment. Design and construction of the equipment and parts subject to wear shall be such that similar machines and devices provided will be completely interchangeable. Working parts shall be accessible for inspection, servicing and repair. Adequate means shall be provided for lubrication of all wearing parts that require lubrication.

- B. In all cases where a device or part of the equipment is referred to herein in the singular, it is intended that such reference shall apply to as many devices as are required to complete the installation.
- C. All work called for in the specifications applicable to each separate section but not shown on the contract drawings in their present form, or vice versa, is required and shall be performed by the Contractor even though it were not specifically delineated or described.
- D. Work not particularly specified in the specifications nor detailed on the contract drawings but involved in carrying out their intents or in the complete and proper execution of the work, is required and shall be performed by the Contractor.
- E. Should the Commissioner require that any portion of the conveying system or equipment be operated prior to final completion and acceptance of the work, such operation shall be under the Contractor's direct supervision, but such preliminary operation shall not be construed as an acceptance of any of the work.

1.11 DELIVERY, STORAGE & USE OF THE PREMISES

- A. Contractor's Use: The Contractor shall confine his equipment, the storage of materials and the operations of his workmen to the elevator machine room, hoistway and pit and any other staging area, which may be provided by the Commissioner, and shall not unreasonably encumber the premises with his materials. The Contractor shall be solely responsible for safe guarding this equipment.
- B. Materials shall be delivered to the site ready for use,

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in the approved manufacturer's original and unopened containers and packaging, bearing labels as to type of material, brand name and manufacturer's name. Delivered materials shall be identical to approved samples.

- C. Materials shall be stored under cover in a dry and clean location, off the ground. Delivered materials which are damaged or otherwise not suitable for installation, shall be removed from the job site and replaced with acceptable materials.
- D. It will be the Contractor's responsibility to keep all of his materials stored within the boundaries of the area assigned to him and to store his material in a neat and safe manner.
- E. Contractor shall not load or permit any part of the structure to be loaded with a weight that will endanger its safety.

1.12 SAFETY & ACCIDENT PREVENTION

- A. The Contractor shall comply with all the health and safety regulations of governing codes, laws and ordinances. Contractor shall take all reasonable steps and precautions to protect health, and minimize danger from all hazards to life and property. The Contractor is responsible for conducting all work activity associated with this project in strict conformance with all applicable OSHA standards and/or local and state regulations. The Contractor is solely liable for enforcement of these safe practices in his operation.

1.13 DAMAGE

- A. Should the building be damaged outside of the zone of operations of the Contract due to work of the Contract, the Contractor shall report the conditions and circumstances to the Commissioner and shall make all necessary repairs and replacements to such damaged work at his own expense with new materials to identically match existing similar work in every respect as approved.

1.14 CUTTING, PATCHING AND DRILLING

- A. In addition to the requirements of the "General Conditions", the following conditions are required:

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1. No holes in the building structural member shall be made without the written permission of the Commissioner. However, if the hole in the structural member is necessary, the contractor shall submit the request with all detail such as location, member affected, size of hole, method of making hole etc.
2. Cutting of metal shall be performed per approval and in accordance with OSHA and NFPA requirements. Provide fire extinguishing equipment and proper ventilation as described below.

1.15 MISCELLANEOUS

- A. Neat and smooth steel sleeves arranged for cement curbs shall be placed through all slabs of concrete or other material for openings.
- B. Metal guards shall be placed around exposed moving machinery and belts in the elevator machine rooms where required and where directed by the Commissioner.

1.16 PAINTING

- A. All ironwork existing or installed by the Contractor and exposed in the hoistway or adjacent thereto, shall be cleaned and painted with one shop coat of an approved rust inhibitive paint. After erection in the field and final adjustments, bare spots on ironwork shall be touched up. Final field coat of paint shall be applied by the Contractor. Field coat shall be similar to shop coat.
- B. The power unit shall be given two field coats of an approved color and then varnished. All cast iron frames of the machine shall be filled, rubbed smooth before painting. All exposed surfaces of the machine room equipment, including controller cabinets, shall be given one coat of special machinery paint and in addition, a field coat of approved color and then varnished.
- C. Power units, controllers, and other panels shall be identified by means of approved templates.
- D. Floor number designations shall be neatly painted on the hoistway side of doors at each floor.

1.17 QUALITY ASSURANCE

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A. Company Field Advisor

Secure the services of a Company Field Advisor for the following:

1. Render advice regarding installation, adjustment and operation of equipment.
2. Witness tests and certify with an affidavit that the equipment installed is in accordance with contract documents and is operating properly.
3. Explain available service programs to facility supervisory personnel for consideration.

B. Regulatory Agencies:

New York State and New York City Department of Buildings.

C. Comply with requirements of ASME A17.1.

1.18 CLEANING, ADJUSTMENT AND FINAL ACCEPTANCE

A. Cleaning: The Contractor shall at all times keep the premises, clean and free from excess accumulation of waste materials or rubbish caused by Contractor's operations.

B. Adjustments and Removals: After completion of work, and before the issuance of Certificate of Final Acceptance, work shall be thoroughly cleaned, and the elevator properly adjusted, so that the system is in proper operating condition. Contractor shall remove from site, all debris, and associated materials which are no longer required as a result of work performed under the Contract to be left as part of finished work, and shall remove all stains and defacements caused by the Contractor's work. The entire work shall be left in a clean condition, satisfactory to the Commissioner.

C. Final Acceptance

Upon completion of work, the contractor shall arrange for building department inspection. The elevator work accepted by the Commissioner in complete respect including the signed inspection certificate from the building department or authorized agency shall be considered final acceptance by the Commissioner.

1.19 FIELD ADJUSTMENT AND TEST OF ELEVATOR

- A. The elevator specified herein shall be adjusted to make comfortable, smooth, rapid and accurate landings, properly coordinated with the door operation and acceptable to the Commissioner. All hoist doors shall be adjusted to operate smoothly, rapidly and without shock or slam and to the satisfaction of the Commissioner. The control system shall provide a smooth acceleration and retardation as finally approved by the Commissioner.

The adjustments shall be properly maintained, and any required corrections shall be made by the installer during the maintenance period.

- B. The Contractor shall furnish all labor, materials, equipment and properly calibrated instruments for making all field tests.
- C. A full load test, as per ASME A17.1 and A17.2 shall be performed on the elevator prior to the acceptance of the work.

The elevator shall be subjected to a test for a period of one-hour continuous run with full contract load in car.

- D. FLOOR LEVELING TEST - Floor leveling device shall be tested for accuracy of landing at all floors with no load in car, in both directions of travel. Accuracy of floor landing shall be within 1/8" of landing both before and after full load run test.
- E. Tests shall be made during regular working hours.
- F. If tests show that the equipment is in any way defective, of poor workmanship, at variance with the requirements of the Contract Documents, or dangerous or objectionable in operation, the Contractor shall make all necessary changes and remedy all defects at his expense, to the satisfaction of the Commissioner, and also pay for the expenses of all subsequent tests until all equipment is acceptable.
- G. Upon completion of satisfactory tests, secure and furnish to the Commissioner, certificates from all departments having jurisdiction, that the elevator and related equipment have been inspected and approved.
- H. Approval and acceptance of equipment by the Commissioner

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is contingent upon prior approval of the above referenced authorities, Consultant, and compliance by the Contractor with all requirements of such authorities and the Contract Documents.

- I. Notices of all tests shall be given to the Commissioner carrier at least ten days in advance of the several tests.
- J. Any alignment, testing, static and/ or dynamic balancing, removal, or replacement of internal machine components must be verified by the Commissioner.

1.20 INSPECTION OF THE WORK

- A. The Commissioner and assigned representative shall at all times have access to the work wherever it is in preparation or in progress, and Contractor shall provide proper facilities for such access and inspection.
 1. The Commissioner shall have the right to reject or require correction of materials and workmanship, which are defective. Rejected materials shall be removed from the premises and satisfactorily replaced with proper materials without additional cost.
 2. Should it be necessary by the Commissioner at any time before final acceptance of the work, to make examination of work already completed by removing or tearing out work, Contractor shall, upon request, promptly furnish all necessary facilities, labor and materials required. If such work is found to be defective, Contractor shall defray all expenses of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of drawings and specifications, the Contractor shall be reimbursed for the removal and replacement of the work.
 3. Failure by the Commissioner during the progress of the work or rejected materials or work not in accordance with the drawings and specifications, shall not be deemed an acceptance thereof, or a waiver of defects therein, and no payment and partial occupancy of the premises shall be construed as an acceptance of the work or materials.

1.21 INSPECTION, PERMITS AND TESTS

- A. The Contractor shall obtain and pay for any necessary municipal and state inspections as required, and also make such tests as may be required by the regulations of such authorities and the Commissioner. These tests shall be made in the presence of the Commissioner.

Contractor shall modify and make necessary adjustment and/or replacement of components, until all tests are approved by the Commissioner. The Commissioner shall be issued a letter of inspection report upon receiving for contractor's record and information.

1.22 RECORD DRAWING FOR ELEVATOR

- A. In addition to the drawings specified under the "General Conditions", the Contractor shall furnish to the Commissioner, for record and operating purposes, the following record drawings for the elevator furnished under this Section:
1. Elementary Diagrams for power and signal systems.
 2. Wiring Diagrams showing all external connections between equipment, devices and power and signal panels.
 3. The Record Drawings shall include the layouts and diagrams enumerated under the heading "WORKING DRAWINGS AND SAMPLES".
- B. Complete sets of all elementary wiring and drawing diagrams for elevator, showing the work as actually installed i.e., "as-built" drawings. The wiring diagram shall be printed on Glossy long life laminated paper. The wiring diagram shall be sequentially numbered (i. e. 1 of 5, 2 of 5, etc.) All wiring prints shall be in the hard binder and secured in the machine room at acceptable location.
- C. All record drawings shall be of the "as-built" type with floor markings indicating actual floor designations.
- D. The manual shall include the complete detail of components identified by part number.

1.23 INSTRUCTION AND TECHNICAL DATA

- A. Furnish set of neatly bound instructions giving the method of control, diagnostics and sequence of operation

5. Velis Associates, Inc.
5. Otis Elevator Company.
6. Thyssenkrupp Elevator Company.

C. Cabs:

1. CEMCO Lift Elevator Systems.
2. Velis Associates, Inc.
3. National Cab and Door Company.
4. CEC Cab Company.
5. Tyler Cab Company.
6. H&B Cab Company.
7. Otis Elevator Company.
8. Thyssenkrupp Elevator Company.

D. Car and landing signal:

1. Monitor Controls.
2. EPCO.
3. G.A.L. Corporation.
4. Innovation Industries.
5. Otis Elevator Company.
6. Thyssenkrupp Company.

E. Elevator controls:

1. Motion Control Engineering (MCE) Inc.
2. G.A.L. Corporation.
3. Elevator Systems, Inc.
4. Computerized Elevator Control Corporation.

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5. Otis Elevator Company.
6. Thyssenkrupp Elevator Company.

F. Car door safe edge:

1. G.A.L. - Scanguard 8000.
2. Janus - Panaforty Plus.
3. Adams - I.C.U. / Plus.
4. Tri-Tronics Company, Inc.
5. Otis Elevator Company.
6. Thyssenkrupp Elevator Company.

2.02 ELEVATOR SCHEDULE

All items mentioned shall be new and as approved. It is not the intent of this schedule to itemize each component necessary to complete the work specified herein as the Contractor will be required to provide all components necessary to complete the work as specified herein whether or not included in the schedule.

Type:	Dual Piston Holeless Hydraulic Passenger Elevator
Power Supply:	208-60-3
Capacity & Speed:	3,500 pounds at 80 feet per minute
Floor Served:	1 and 2 (In line)
Travel:	11'-4"
Operation:	Simplex, selective/collective with Independent Service and Firefighter's Service Operation (Phase I & II).
Power Unit:	Dry Pump Type
Pump Motor:	30 Hp

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Controller: Microprocessor based

Guide Rails: 15 lb. "T" Rail

Jack Assembly: Twin jacks

Platform: 5'-8" Wide x 8'-2" Deep

Car Enclosure: 5'-4" Wide x 7'-2" Deep

Hoistway Entrances: 3'-6" X 7'-0" Two Speed Slide

Car Door Size: 3'-6" X 7'-0" Two Speed Slide

Car Door Operation: Powered Automatic - AC

Wiring: All wiring, conduit and junction boxes as needed

Fixtures: Car operating panel with emergency light, digital car position indicator, hall push stations and car travel lantern.

Communications: New hands free emergency communications device and intercom system as required by Code.

ADA Compliance: Comply with ADA requirements to accommodate the physically disabled including applied floor markings on each hoistway entrance door jamb and appropriate markings integral with car operating panel, floor by-passing chime, 2:1 chimes, etc.

Hoistway Switches: Top and bottom limit switches.

Car Top Inspection Station: New to comply with present Code requirements.

Pit Ladder: Steel ladder extending 48" above access landing.

Pit stop switch: Adjacent to pit ladder

Buffers: Spring

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Sump Pump Location: Pit

Emergency power: Battery powered emergency lowering device

2.03 ELECTRIC SERVICE

- A. The power supply is 208 Volts, 3 phase, and 60 hertz, AC. The lighting supply is 120 volts, single phase, and 60 hertz, AC.
- B. The system voltages stated on drawings are the rated voltages at the main switchboard and are subject to the ordinary fluctuations with demand, etc. The elevator shall operate successfully with any load up to contract load at any voltage at the starter panel terminals not more than 10 percent above or below the rated system voltage, but not necessarily in accordance with the high standards of performance established herein. These standards of performance shall, however, be met when the voltage at the terminals of the controllers does not vary more than 5 percent above or below the rated system voltage.
- C. Before proceeding with the manufacture of any of the electrical equipment, the Contractor shall verify the voltage and other characteristics of electric service.

2.04 GENERAL DESIGN AND CONSTRUCTION REQUIREMENTS

- A. All elevator equipment and materials shall be new.
- B. All of the elevator equipment shall be designed, constructed, installed and adjusted to secure the best commercial available results with respect to smooth, quiet, convenient and efficient operation, durability, economy of maintenance and operation, and the highest standards of safety. The car speed between acceleration and retardation periods under all conditions and loads from no load to full load up or down shall not vary more than 5 percent from the scheduled contract speed.
- C. All elevator equipment shall conform to the best commercial standards with respect to design, construction, operating results, efficiency, etc.

2.05 MECHANICAL DESIGN REQUIREMENTS

- A. The following typical requirements shall apply to all parts of the work and are supplementary to other requirements noted under the respective headings.
- B. All bearings shall be liberally sized in accordance with the best commercial elevator usages which have proved entirely satisfactory on heavy-duty installations.
- C. All bolts used to connect moving parts, bolts, carrying hoisting stresses and all other bolts, except guide rail bolts, subject to vibration or shock shall be fitted with adequate means to prevent loosening of the nuts and bolts. Bolts transmitting important shearing stressed between machine parts shall have tight body fit in drilled holes. All bolts shall be of proper grade and hardness.
- D. All bearing and sliding surfaces of shafts, pins, bearings, bushings, guides, etc., shall be smoothly and accurately finished. The shaft shall be assembled and installed in accurate alignment and with working clearance most suitable for the load, speed, lubrication and other conditions of use. During the maintenance period, all bearings shall be regularly checked for any tendency to run hot and defects corrected in an approved manner.
- E. Protection from moving parts: Belts, pulleys, couplings, projecting set screws, keys, and other rotating parts located so that any person can come in close proximity thereto, shall be fully enclosed or properly guarded.

2.06 ELECTRICAL DESIGN REQUIREMENTS

- A. The following typical requirements shall apply to all parts of the work, and are supplementary to other requirements noted under the respective headings.
- B. The design and construction of the motors shall conform to the requirements of these specifications. The elevator motor specified herein and transformer shall be capable of meeting the I.E.E.E. and NEMA standard tests for maximum temperature rise of 50 degrees C. at full rated capacity for the duty specified. The motor and relay shall be reasonable free from magnetic hum, winding noise and vibrations.
- C. Insulation on motor coils and windings and on all

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insulated switch, relay, brake, and other coils shall conform to the requirements for minimum Class "E" insulation, as defined in Standards for Rotating Electrical Machinery.

- D. Nameplates shall be provided giving the information required by the N.E.C. Characters shall be easily legible.
- E. Hall signal circuits shall not exceed 48 volts.
- F. In the machine room, hoistway, etc., the equipment shall be laid out and installed so as to allow as adequate and convenient access for maintenance as space conditions and Code will permit.

2.07 ELECTRIC WIRING

- A. Wiring: Insulated wiring shall have a flame retarding and moisture resisting outer cover and shall run in a metal conduit, metallic tubing or wire ducts. All insulated conduction and conduit, or tubing, as well as fittings including metal boxes, troughs and ducts, shall comply with the requirements of the National Electric Code.
- B. Provide ten percent spare wires between each controller, selector, hatchway junction box and starters panel; all spares to be properly tagged or otherwise identified with clear and indelible markings.

2.08 TRAVELING CABLES

- A. Provide traveling conductor cables which shall be an approved assembly of maximum flexibility. The construction of the cables shall have been successfully used in comparable heavy duty installations, without developing any defects requiring or indicating abnormal maintenance. The complete cable shall be sufficiently flexible to readily adapt itself to all changes in the position of the car and hang straight and without twist. The cable shall not be of the type requiring pre-hanging. The cables shall bend 360 degrees with an inside radius of one foot without any permanent set and cracking of the outer covering. The open loop shall not twist upon itself. All traveling cables shall be provided with steel or Kevlar strands and be free of all jute interstice fillers. Provide separate four (4)

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twisted pairs of shielded wires of polyester Mylar wrap with 100% coverage and a drain wire for telephone communication system for the car. Car lighting, receptacles and fans shall be provided on an individual circuit. Provide separate coaxial, specially designed for video system, cable for CCTV.

- B. Traveling conductor cables shall terminate in terminal boxes securely supported at the halfway in the hoistway and on the bottom of the car platform. These boxes shall have approved connection strips for making all conductor connections and approved strain devices or installation blocks for connecting the steel or Kevlar supporting strands and relieving the conductors of all strain. These boxes shall have screwed on or bolted covers of material and thickness as specified for the boxes. The terminals shall be marked in a legible permanent manner. Boxes shall be not less than No. 10 USSG steel or galvanized cast iron boxes as approved. Provide additional cab wiring and conduit as required.
- C. The swing of the traveling conductor cables shall be checked when the elevator is running, and all shields, screens and pads necessary to prevent chafing of traveling cable insulation shall be installed. The natural loop in the traveling cables shall not be less than 15 inches unless otherwise specially approved by the Commissioner. The cable shall be of a type that is torque free thereby eliminating pre-hanging, twisting and cross over. Install beam pads as necessary to prevent chafing of trail cable insulation.
- D. The traveling conductor cables and the corresponding groups of conductors connecting these cables to the control and signal panels and to the car operating panel shall each contain spare conductors equal in number to not less than 20 percent of the number of working conductors of the same size and type. Not less than two spare conductors shall be provided in each cable and corresponding group of wires containing less than five working conductors. Separate cables shall be provided for lighting, signaling, control, and safety switches. Include four (4) pairs of shielded wire for each car for communications. Car lighting, receptacles and fans shall be provided on an individual circuit.
- E. Multiple traveling conductor cables may be installed in single installation blocks provided 3" to 4" separation between cables at bottom of loops are used.

2.09 OPERATION OF ELEVATOR

Using a microprocessor-based controller, operation shall be automatic by means of the car and hall buttons. If all calls in the system have been answered, the car shall park at the last landing served.

2.10 HYDRAULIC POWER UNIT

The hydraulic power unit shall be of compact design suitable for operation under the required pressure. The pump and motor shall be connected by a v-belt drive assembly. The control valve shall control flow for up and down directions hydraulically and shall include an integral check valve. A control section including control solenoids shall direct the main valve and control: up and down starting, acceleration, transition from full speed to leveling speed, up and down stops, pressure relief and manual lowering. All of these functions shall be fully adjustable for maximum smoothness and to meet contract conditions. Design shall be based on 80 elevator starts per hour. The power unit shall be mounted on vibration sound dampeners designed to isolate the unit from the building structure. The power unit shall also contain a low-pressure switch (as required) and a tank shut-off valve. The power unit shall be provided with a muffler to reduce pulsation and noise, which may be present in the flow of the hydraulic fluid. A silencer that contains an internal bladder and pressurized by air is not acceptable.

- A. The manual lowering valve shall be clearly labeled to indicate its function and shall permit lowering the elevator at slow speed.
- B. The pressure valve shall be located between the cylinder and hydraulic control valve unit. The loss of pressure at top of the cylinder shall activate the pressure switch to prevent operation of the lowering valve and the circuit for operation of safety condition per elevator code.
- C. An anti-creep leveling device shall be provided to maintain the car within 1" of the landing irrespective of the position of the hoist door. The system shall work as per ASME A17.1 code.

2.11 HYDRAULIC OIL

The hydraulic oil shall be of the grade recommended by the manufacture of hydraulic system. The oil shall be suitable to all components including seals & gasket of valve unit,

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pump unit, and cylinder piston assembly. A tag stating the recommended type of oil for the system shall be mounted on the oil tank. Oil tank and hydraulic system shall be provided with a minimum of 10 gallons of extra hydraulic oil in the oil tank. The tank shall be calibrated for minimum and maximum oil level for the elevator.

2.12 HYDRAULIC PIPES AND PIPE FITTINGS

- A. Provide all necessary piping connection between the hydraulic cylinder and hydraulic pump unit. The hydraulic line shall be sized to accommodate required oil flow and system operating pressure as required meeting performance requirements. The oil lines shall be supported by approved brackets at spacing not more than seismic requirements of the elevator code and at least two means of supports between fittings. Pipeline stands and support shall be securely fastened to the building structure. The oil line shall be routed so as to minimize the number of bends, offsets, and elbows.
- B. When piping passes through wall, sleeve shall be provided of the size with minimum 1 inch clearance between pipe and sleeve. The sleeve shall be fitted with fiberglass packing and seal both ends with fire proof, no-hardening mastic of $\frac{1}{4}$ inches minimum thickness.
- C. All piping shall be seamless steel not less than schedule 80 and complying ASTM 53 grade B. All piping shall be threaded.
- D. A quick acting gate type shut-off valve shall be provided in the machine room near pump unit.

2.13 CONTROLLER

A new microprocessor-based controller shall be provided along with a solid state starter. Include necessary starting switches together with all relays, switches, solid-state components and hardware required for operation, including door operation, as described herein. A three (3) phase overload device shall be provided to protect the motor against overloading.

All available options or parameters shall be field programmable, without need for any external device or knowledge of any programming languages. Programmable options and parameters shall be stored in nonvolatile memory. As a minimum, there shall be a 32-character alphanumeric display

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used for programming and diagnostics.

Controller shall be provided with a battery lowering device pre-wired, pre-tested and integrated into the standard enclosure.

2.14 INSPECTION AND INDEPENDENT SERVICE OPERATION

The elevator shall be designed with Inspection Service and Independent Service features.

2.15 EMERGENCY FIRE FIGHTERS' SERVICE

- A. The controller system shall be wired in such a manner to affect the operation as herein after described in compliance with New York State and local codes.
- B. Furnish and install three (3) position keyed switch and illuminating fire emblems in corridor at main level. The cover plate of the key switch shall be clearly identified in red lettering as "RESET", "OFF", and "ON" with "OFF" position as center position. The key shall be removable from any position.
- C. Emergency Fire Fighters' key switch shall be provided in the elevator car operating station.
- D. Once emergency terminal return has been initiated by activation by placing the Fire Fighters' key switch, located in Main Lobby, to "ON" position, the following operation shall go into effect. The feature described herein below is guide line, but not limited to meet the ASME A17.1 code.
 - 1. If traveling away from the Fire Recall floor, shall stop at the next landing floor without opening its doors, reverse direction and proceeds non-stop to the Fire Recall floor lobby. If traveling toward the Fire Recall floor, shall continue non-stop to the Fire Recall floor.
 - 2. Door reopening devices for power-operated doors, which may be affected by smoke or heat so as to prevent door closure, shall be rendered inoperative.
 - 3. Upon return to the Recall Floor lobby, the car and hoistway doors shall open and remain open. The Fire Fighters' indicating lights in elevator shall remain on.

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4. Emergency stop switch shall be rendered inoperative as the elevator start moving from landing. The inoperative emergency stop switch during fire recall shall remain inoperative during phase I operation.
 5. All car and corridor call buttons and all door opening and closing buttons shall be rendered inoperative, and all call register and directional lantern shall be cancelled and remain inoperative. Position indicator shall remain in service.
 6. The car shall be provided with visual and audible signal system that shall be activated to alert the passenger that car is returning nonstop to the designated floor. The signal shall remain active until the car has return to the designated floor.
- E. Furnish and install, in the elevator cab, a three-position keyed switch marked "OFF", "HOLD" and "ON" (in this order) with the "HOLD" position as center position and labeled "FIRE OPERATION". This key switch shall become effective only when at the designated level phase I is in the "ON" position has been activated and the car has returned to the designated floor by phase I of the Fire Fighters' Service.

The key shall be removable in "HOLD" or "OFF" position. The "OFF", "HOLD" and "ON" positions shall not change the operating until the car is at landing with door open.

The elevator at the Fire Recall level during phase I of Fire Fighters' activation shall be available for phase II of Fire Fighters' by turning the Fire key switch in the cab to "ON" position and overriding all keyed switches and programming. During phase II of Fire Fighters System, the elevator shall operate as follows.

1. Car and hoistway door operation shall subject to continuous pressure of the "DOOR OPEN" button. However, if the "DOOR OPEN" button has been released before the doors are completely open, they shall automatically re-close.
2. Provision shall be made to all operative that, after having made a floor selection change such selection if so desires, by pressing a "CANCEL" button. When activated, all registered calls shall

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- be cancelled and traveling car shall stop at or before the next available landing.
3. The opened car and hoist doors shall be closed by continuous pressure on the "DOOR CLOSE" button. If the button is released prior to doors reaching fully closed position, the doors shall automatically re-open.
 4. All corridor call buttons and directional lantern shall remain inoperative.
 5. The elevator shall only be removed from in car Fire Fighters' Service operation by moving the Emergency Fire key switch in the car to "OFF" position and the elevator is at the Main Recall floor.
- F. Provide a visual signal the elevator that will indicate when Emergency Fire Fighters' recall is in effect.
- G. Provide a fire recall audible signal which will sound in the cab when Emergency Fire Fighters' recall is in effect. Audible signal shall stop sounding when the elevator returns to the Main Lobby and the doors open.
- H. The key switches and instructions shall be identified with appropriate designations in "Red" lettering.
- I. All cover plates for such switches & buttons shall bear the lettering "FIRE RECALL" and the operating instruction as per ASME A17.1.
- J. The Fire Fighters' Service key switch shall be operable by city Fire Department standard keys only.
- K. "CALL CANCEL" button and vandal resistant visual Fire signal shall be adjacent to the Fire key switch in the elevator cab.
- L. When the phase II of Fire Fighters' switch, located in elevator cab, is in the "HOLD" position, the elevator shall be on Fire Fighters' phase II operation. The car shall remain at the landing with its doors open. The door close buttons shall be inoperative.
- M. Fire Fighters' key switch shall be in a car-operating station.
- N. All wiring shall be high temperature fireproof type. Wiring shall run in hoistway duct and steel pipe in the

approved manner to meet the electrical code.

O. Demonstrate the Fire Fighters' system test in presence of the Commissioner or authorized representative.

2.16 CAR GUIDE RAILS AND BRACKETS

A minimum of 15# guide rails shall be provided for the car consisting of planed steel tees erected plumb and securely fastened to the hoistway framing by heavy steel brackets. The ends of all guides shall be tongued and grooved, forming matched joints and shall be connected with steel splice plates. Brackets are steel angles bolted together, one fastened to wall and the other clipped to the guide rail. Rails shall be located as required for the new elevator configuration. Provide all necessary rail and jack supports including inserts and brackets. Coordinate installation of rail inserts with other trades as required.

2.17 SELECTOR

- A. Provide a magnetically operated selector and leveling system shall be located on top of the car. The operation of the selector shall be to govern function such as direction of travel, automatic stopping, and leveling at landings. The selector shall have a correction feature at least once in each direction of travel and at landings.
- B. The selector tape shall run from top to bottom of the hoistway with spring tension compensation. The tape shall be metallic type with weather resistant coating. The magnet sensor shall be firmly attached to the tape.
- C. The reader head located on top of the car shall be provided with low friction sliding gibs at both ends.

2.18 LIMITS & LEVELING SWITCHES

- A. Limit switch package shall consist of switches and brackets that mount to the back of the rail. Switches include top and bottom slowdown, top and bottom directional and top and bottom final. The elevator will be provided with an automatic leveling device which will bring the car to a stop within 3/8" of the landing level regardless of load or direction of travel. Landing level will be maintained within the leveling zone irrespective of the hoistway doors being open or closed.
- B. All final limits shall be individually rail mounted and

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independently adjustable. The enclosure of the terminal switches shall meet NEMA 4.

2.19 TOP OF CAR OPERATING STATION

- A. Provide the elevator with an operating device, mounted to the crosshead which will permit slow speed car operation for purposes of adjustment, maintenance and repair, This control shall consist of five buttons listed "UP", "DOWN", "RUN", "EMERGENCY STOP SWITCH" (red in color), an "INSPECTION SWITCH" and a light fixture with bulb protection enclosure and switch. The inspection station shall be provided with fire fighters' buzzer and indicator light.

2.20 HOISTWAY ENTRANCES

The entrances at each landing shall be side opening two speed horizontal slide having a clear jamb opening as shown on drawings. Door panels and frames shall have a finish as approved by Commissioner.

- A. FRAMES
Frames shall be of bolted construction for a one piece unit assembly comprised of head and side jamb sections. All frames shall be securely fastened to sills and header and shall be of #14 gauge sheet material. The jamb width shall be sufficient for the installation of the hall button fixtures.
- B. SILLS
Provide nickel silver sills with non-slip wearing surfaces and grooves for door guides. Sills shall be supported on steel angles furnished and installed.
- C. FASCIA GUARD
Fascia plates, fabricated from #14 gauge steel, shall be fastened to the header and the sill above.
- D. TOE GUARD
A toe guard, fabricated from #14 gauge steel, shall be furnished at the lowest landing beveled to the wall.
- E. DUST COVER
A dust cover, fabricated from #14 gauge steel shall be furnished at the highest landing.
- F. HEADERS
Headers of sufficient size and thickness to provide support for the frame and hangers, shall be securely

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fastened to the strut angles and shall include integral hanger tracks.

G. STRUTS

Struts angles shall be of sufficient size to support the entrance and shall be securely fastened from sill to underside of building steel above.

H. HANGERS

Hangers shall be of the sheave type, two sheaves per door, rotating on a precision ball bearing. The roller shall be on an eccentric stud to provide adjustment. Hangers shall be integral and welded to the top of the doors.

2.21 DOOR HANGER, TRACK, GIBS AND CLOSER

A. Hoistway Door Hanger, Track, Gibs and closer.

The elevator hoistway sliding door panel shall be equipped with 2-point suspension sheave, hanger and track complete. Sheave shall be of hardened steel or composition approximately 2-1/4 inches in diameter medium speed operator. The sheave shall have ball bearing properly sealed to retain grease lubrication, and shall be mounted in housing attached to the door panel by two cap screws. Each sheave shall be equipped with adjustable ball bearing or approved sleeve bearing to take the up-thrust of the door. Sheave shall be quiet running.

B. Track shall be cold drawn high carbon steel of heavy section, with surface shaped to conform to the tread of sheave and roller. Drill and tap the entrance frame to secure the track with flat head machine screw to be mounted from hoistway side. Provide strut angle from floor to floor securely mounted to the building structure. The track shall be bolted to the strut angle.

C. Suitable means shall be provided to lubricate the tracks of the sheave.

D. Provide floor mounted door spring closers at each entrance.

E. Provide two (2) removable nylon or Teflon gibs with fire tabs on the underside of each hoistway door panel.

F. Provide a # 14 gauge minimum of 8" long zinc plated

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vandal resistant "Z" bracket at bottom of each hoist door located between door gibs. The bottom leg of "Z" bracket shall run in the sill groove. The "Z" bracket shall be mounted with minimum six countersunk screws on the back side of the hoist door.

2.22 ELECTRICAL INTERLOCKS AND DOOR CONTACTS

- A. The door at each hoistway landing shall be provided with approved type hoistway door interlock as required by Code.
- B. The door of the elevator car shall be equipped with approved electric contacts conforming to the requirements of the Code.

2.23 CAR FRAME, AND PLATFORM

- A. Construct the car frame of steel channels and angles securely bolted, riveted or welded. Reinforce and brace the frame so as to relieve the car enclosure of all strain. Provide new entrance toe guard. The toe guard shall be of minimum 12 gauge baked enamel steel plate. The toe guard shall be of full width of the opening plus one foot on each side and properly secured to avoid any undue noise.
- B. The new platform shall be constructed of a structural steel frame filled with two layers of marine plywood. The underside of the platform shall be covered with baked enamel painted, galvanized sheet steel to meet the fire rating as per code.
- C. All exposed metal shall be factory painted with a minimum of one primer coat and two coats of rust inhibiting paint.
- D. Provide a nickel silver sill for the platform.

2.24 CAR GUIDE ASSEMBLIES

The top and bottom of the car frame shall be provided with suitable slide guide shoes of the self-aligning swivel type. A removable polyethylene gib shall be provided with each guide shoe.

2.25 ELEVATOR CAR ENCLOSURE

- A. A new cab shall be furnished and installed as shown on the contract drawings.

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- B. The car enclosure shall be constructed to fit the sling, platform and crosshead. The cab shall be in accordance with the contract drawing and as specified herein. The cab is to be manufactured in a first class workmanship manner, and shall be so constructed and installed as to be free of squeak and noise.
1. Cab Lighting: Provide recessed low voltage down lighting as shown on the contract cab drawing.
 2. Handrail: Provide 1 ½ inch flat bar of # 4 finish stainless steel. The handrail shall have bend ends towards cab wall and mounted on the rear and side walls. The handrail mounting block shall be replaceable, through bolted to cab panel.
 3. Top Emergency exit shall be provided in the ceiling and opening upward clear of crosshead, other structure, and car door operator. Emergency exit cover in the ceiling shall be hinged and held in place by non-removable fastening device, and shall be opened from top of car only. Provide a mechanical stop when door opens toward hatch. Provide top exit guard. The top emergency exit shall be provided with contact switch.
 4. Ventilation for the car enclosures shall be provided with a two-speed type exhaust ventilating blower unit mounted in the car ceiling. The ventilation blower shall be suitably isolated from cab ceiling, and shall distribute not less than 600 cubic feet per minute (free delivery) at top speed. The switch for the operation of the exhaust unit shall be provided in the car station service cabinet.
 5. The elevator car enclosure shall be provided with an emergency lighting system. Emergency light shall automatically turn on instantaneously as normal lighting power fails. The emergency backup power shall be capable of maintaining emergency light for four hours, operate alarm bell and run exhaust fan for minimum of one hour.
 6. Cab Flooring:
 - a. Provide the elevator with sub flooring to consist of a minimum of two layers of marine grade plywood.

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- b. The cab shall be provided with finish floor of thick one vinyl sheet and securely installed per manufacturer's guideline.
 - c. The flooring shall be "ARMSTRONG" Laminate flooring (L6572) Color: Slate - Ebony Mist. Collection: Stones & Ceramics or approved equal.
- C. Pad Buttons & Protection Pads:

Pad buttons and vinyl quilted vinyl pads shall be provided. Pads shall be of a size for complete protection of the sides, rear and front return panels. Provide stainless steel pad buttons. Provide with one (1) set of vandal proof nylon reinforced, quilted pads of a size to afford complete protection of all sides for the aforesaid cab. The outer skin of the pad on both sides shall be 3 ply poly scrim material not less than 12 oz. per square foot. Furnish heavy duty No. 6 spur grommets. Submit sample for approval.

2.26 CAR DOOR OPERATOR

- A. Door control to open doors automatically when car arrives at a landing in response to a normal hall or car call. Door operation will be automatic at each landing with door opening being initiated as the car arrives at the landing and closing taking place after expiration of a time interval. A car door electric contact will prevent starting the elevator away from the landing unless the car door is in the closed position. Doors will be arranged to remain open for a time period sufficient to meet disability requirements.
- B. Elevator doors shall be provided with a reopening device that will stop and reopen the car door(s) and hoistway door(s) automatically should the door(s) become obstructed by an object or person. Primary door protection shall consist of a two dimensional, multi-beam array projecting across the car door opening.

2.27 ELEVATOR FIXTURES

- A. All hall and car fixture faceplate shall be 1/8 inch thick.
- B. The hall and cab fixtures shall be #4 finish stainless steel. Borders and Handicap symbols shall be provided.

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- C. Fastenings for all exposed fixtures shall be secured with tamperproof Spanner head screws in the same material and finish as the fixture it is securing.
- D. All hall and car call buttons shall be one inch (1") in diameter with a jewel type illuminative indicator in center and made of the same finish as faceplate. The button shall be surrounded by a translucent halo (1-3/8 inch diameter) and shall illuminate in with L.E.D. lamps evenly spaced behind the halo. The button shall be vandal resistant type with restrictive movement of button. Pressure on a button shall illuminate the button to indicate that a call in the desired direction has been registered.
- E. The contractor shall provide opening size and location to install all corridor fixtures.
- F. Contractor to provide back boxes, grouting etc., for all fixtures.

2.28 CORRIDOR PUSH-BUTTON

- A. Provide corridor hall button fixtures with "UP" and "DOWN" buttons, at the intermediate landings, and single buttons at the terminal landings. All buttons shall be of the same finish as faceplate, as hereinbefore specified.
- B. Provide hall button fixtures at location to meet handicapped code and as per drawings. The Lobby Floor fixture shall include Fire Service key switch and light jewel. Fixture faceplates shall be 1/8 inch thick with material and finish as hereinbefore specified.

2.29 CORRIDOR POSITION INDICATOR

Provide corridor position indicator at main Floor (1).

- A. The position indicator shall of the L.E.D. type with characters of minimum 2" high with corresponding floor characters and car directional travel indicators. The up travel indicator shall illuminate 'green' while the down direction travel indicator shall illuminate 'red'.
- B. The cover plate shall be 3/16" stainless steel #4 finish.

2.30 CAR OPERATING PANEL

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- A. Car operating device for the elevator shall consist of a car operating panel shall include a series of push buttons numbered to correspond to the floor served, alarm button, a set of "Door Open" and "Door Close" buttons, Fire Service key switch, fire activation signal, call cancel button for Fire Fighters' service, emergency stop button, independent operation "UP" & "DOWN" buttons, service panel, cab communication grill with speaker, emergency light, engraving as per detail on the drawings. The service panel shall include the key switches for cab lighting, cab exhaust fan, independent service, inspection service, emergency test button, and electrical receptacle. The service panel shall be hinged lockable door suitable for certificate frame with lexan lens.
- B. The cover of the car operating panel shall stainless steel with # 4 finishes. The cover of the car station shall be provided with three telescopic chromium plated hinges and key switch lock plus screws at all four corners.

2.31 TELEPHONE CAB COMMUNICATION SYSTEM

- A. The Contractor shall furnish and install an auto-dial telephone communication system with speakerphone and complete wiring. The system is described in the following and is referred to as "Cab-communication System". The device located in the elevator cab shall communicate with a programmed phone number, a location in the lobby and the elevator machine room as per NYC appendix K.

The Contractor shall provide wiring from cab communication with junction box in the machine room and shall make final connection to the communication system.

- B. A speakerphone installed behind the cab operating station shall be auto dial type emergency telephone. The cab-communication system shall have "Push" button to activate the telephone and a led indicator. Provide sign of telephone and engraved letter "EMERGENCY PHONE" and "PUSH TO TALK" under the push button.
- C. The system shall be capable of programming two phone numbers. When cab-communication is established by pressing the "Push" button in cab, the phone dials the primary program number which has been programmed into memory M1. If there is a busy signal or if the call is not answered in six rings, the phone hangs up, goes off

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hook, and dials the secondary program number which has been programmed into memory M2. The speakerphone can differentiate between ringing, a busy signal, and an answered call. The speakerphone toggles between the two program numbers until the call is answered. The speakerphone disconnects automatically when the called number hangs up phone.

- D. The system shall be equipped with Back-up power supply to provide full operation of phone for four hours in the event A/C power failure.
- E. Red LED is lighted when the phone is activated and flashes when the call has been answered. LED goes out when the call is disconnected.

The cab-communication system shall be Rath Microtech or equivalent.

2.32 CAR POSITION INDICATOR

- A. The position indicator shall be green illumination type L.E.D. of minimum 2" high with corresponding floor characters and car travel indicators. The up travel indicator shall illuminate 'green' while the down direction travel indicator shall illuminate 'red'. The window of the indicator shall be provided with cover of high impact resistant material such as poly carbon or lexan.

The car position indicator shall be provided with floor passing gong of different tone than the travel gong. The intensity of the gong shall comply with ASME code.

- B. The cover plate shall be same as faceplate detailed above.

2.33 CAR LANTERN

- A. Car lantern shall be vandal resistance and shall be provided in the jamb of each cab opening. The car lantern shall be provided with illuminated type directional arrow show the travel of the elevator. The 'UP' indicator shall be with green and the "DOWN" indicator shall be with red. Car lantern shall remain illuminated until car leaves the landing.
- B. One of the car lanterns shall be provided with an audible travel directional signal to sound one gong for upward travel with 'UP' indicator and two gong for downward travel with "DOWN" indicator.

- C. The indicator shall be flush with inside of door jamb.

2.34 HYDRAULIC PLUNGER - CYLINDER ASSEMBLY

- A. Each cylinder shall be constructed of steel pipe of sufficient thickness and suitable for the operating pressure. The top of each cylinder shall be equipped with a cylinder head with a drip ring to collect any oil seepage as well as an internal guide ring and self-adjusting packing. Each plunger shall be constructed of selected steel tubing or pipe of proper diameter machined true and smooth with a fine polished finish. Each plunger shall be provided with a stop ring electrically welded to it to prevent the plunger from leaving the cylinder. Each plunger and cylinder shall be installed plumb and shall operate freely with minimum friction. A steel packing gland with a phenolic guide bearing, wiper ring and packing especially designed for hydraulic elevator service shall be provided.
- B. Scavenger Pump - Provide an electrically operated scavenger pump that provides means to return oil to the system. System shall be equipped with a brass float assembly as manufactured by Leland Pump Company or equal.

2.35 BUFFER AND FOOTING STEEL

- A. Provide car buffers with footing steel of wide surface area on the floor for load distribution.
- B. The elevator shall be provided with spring buffer per ASME A17.1.
- C. The buffers shall have successfully passed engineering tests, and shall be certified to by Bureau of Standards, or an approved testing laboratory. Such certification shall cover range of speed and load requirements for this installation. All metal plate marked with name of manufacturer, type, stroke in inches and range of speed and load certified, shall be provided to all buffers.
- D. The footing steel shall be applied with primer and two (2) coat of rust inhibitive paint.

2.36 OVERSPEED VALVE (RUPTURE VALVE)

- A. Operation: The valve designed to stop the elevator in

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the event of an over-speed condition caused by a broken supply line or an abnormally high rate of flow between over-speed valve and power unit. The rupture valve shall be installed and adjusted per manufacturer instruction, the copy of which shall be submitted to the Commissioner and consultant. The rupture valve shall be tested in presence of the consultant.

- B. Location: The valve shall be located next to cylinder inlet.

2.37 PIT STOP SWITCH

Provide pit switch for the elevator in the elevator pit to prevent operation of the elevator when the switch is in "OFF" position. The pit switch shall be located as required by Code.

2.38 ELEVATOR IDENTIFICATION PLATES

- A. Provide metal plates permanently secured to buffer, controller, machine room and disconnect switch etc., which shall identify the city elevator identification number, manufacturer's data, model and all other related information with 1 inch high engraved numbers filled with black paint.
- B. Provide a metal plate permanently secured to the controller or disconnect switch showing the Code edition which the elevator is installed under.

2.39 HANDICAPPED PROVISIONS

- A. Car operating panels shall be mounted so that the dimension from the floor to the centerline of the highest button does not exceed 48 inches, and the dimension from the floor to the centerline of the emergency buttons does not exceed 35 inches.
- B. The cab door shall be provided with non-touch type device to reopen the door if passenger is entering or leaving the cab while the door is closing.
- C. Provide floor designations with Braille and symbol per code, on both side jambs of the hoistway entrances, for the elevator visible from within the car and the elevator lobby at a height of 60 inches above the floor. Designations shall be a minimum of 2-1/2 inches high and

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shall be as approved by the Commissioner.

- D. The cab shall be provided with emergency cab communication system suitable for handicap person.
- E. The travel directional gong shall sound once for the Up direction and twice for the Down direction.
- F. Provide an audible signal in the elevator cab and which shall sound to identify the passing a floor during elevator travel.
- G. Provide floor markings with Braille as required by handicap code adjacent to elevator car control button. The floor marking shall be integral with the faceplates and applied plates will be unacceptable.
- H. The centerline of hall buttons shall be located 3'-6", above the finished floor.

PART 3 - EXECUTION

3.01 GUIDE RAIL

- A. Verify that the guide rails are without any gaps at joints.
- B. Verify that the rail brackets comply with seismic requirement of the zone.
- C. Verify guide rails are securely mounted or anchored to hoistway framing at each floor.
- D. Check that the guide rails extend from pit floor to underside of the overhead of hoistway or provide extension as may be require.
- E. Verify that the guide rails are plumb and parallel, shim as required. Verify that the bolts are torqued as per manufacturer's recommended value.
- F. Verify that the splice plate is not interfering with supporting clamp and bracket.

3.02 INSTALLATION OF HYDRAULIC EQUIPMENT

- A. General

Install hydraulic pump unit, oil tank, valve and related

pipes in the machine room.

- B. Install piston-cylinder assembly on the pit floor with proper footing steel.
 - 1. The piston-cylinder assembly shall be plumb.
 - 2. The cylinder shall be properly supported.
 - 3. Inspect rupture valve and test according to manufacturer recommendation.
 - 4. Inspect the piston-cylinder assembly for any leaks.
 - 5. Inspect the function of air bleed valve.
 - 6. Inspect piston packing and seal for any leak.
 - 7. Inspect that piston is without any scratches.
 - 8. Inspect all piping for proper installation and leak.
 - 9. Inspect installation of pump unit operation, pressure gauge, relief valve, hydraulic valve unit.
 - 10. Test pressure relief valve and working pressure at full load.
 - 11. Check hydraulic valve operation and leak.
 - 12. Check oil level indicators in oil tank.
 - 13. Check oil level when car is at bottom and top floor.

3.03 INSTALLATION OF CONTROLLER

- A. Install elevator controller in the elevator machine room. The controller shall comply with ASME 17.5 code.
- B. Install components and integrate with controller for required operation of elevator.
- C. Field Quality Control
 - 1. Inspection:
 - a. Power Off: Inspect control equipment for dirt, dust, grease or other foreign material

that would prevent proper operation.

2. Power On:

- a. Run elevator up and down shaft, stopping at each floor. Check for accurate landing and smooth stop and start under all load conditions.
- b. With elevator running, inspect control equipment for excessive arcing, heating of coil, misalignment of relay, contactor or switch.

3. Test:

- a. Individually test each component for compliance with its specified function and operation.
- b. Demonstrate that elevator perform in accordance with required type of operation.
- c. Test elevator step by step as specified under function, and operation, in Part 2.

3.04 INSTALLATION OF CAR

A. Car Sling and Platform:

1. Verify car platform and sling between main guide rail are at equal distance on both side.
2. Align car and sling in hoistway, adjust guide in perfect alignment.
3. Clearance between car platform and hoistway door or entrance sill nose shall not exceed 1-1/4".
4. Check mounting of the guides shoes to car sling.

B. Car Enclosure:

1. Assembly of car enclosure and securely fastened to car platform.
2. Fasten door support structure for cab door.

C. Field Quality Control:

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1. Examine car enclosure for structural soundness. Determine if car enclosure is securely fastened to car platform.
2. Verify that top exit panel is in place.
3. Examine lighting fixture to determine if it is securely fastened, have required protection, and provide sufficient illumination.

3.05 INSTALLATION OF CAR DOOR OPERATOR

- A. Verify the installation of cab door operator including electric motor, belt drive, linkage, door control, wiring, safety edge, infrared protective device, etc.
- B. Lubricate all working parts.
- C. Proper wiring to door interlock etc.
- D. Verify installation of safety edge to cab door system.
- E. Field Quality Control
 1. Inspect component for proper operation ascertaining that the operator and component are neatly and securely installed and aligned.
 2. Test: Demonstrate that door operators perform in accordance with required operation. Check speed and force of the door not exceeding 25 lb/ft.
 3. Test: Safety edge operation including nudging.

3.06 LANDING SIGNAL EQUIPMENT

- A. General: Install elevator landing signal equipment and integrate with elevator control equipment for required operation.
- B. Power Supply for Signal Equipment: Install in elevator or machine room.
- C. Landing Fixtures: Installation of the riser for landing fixture.

3.07 INSTALLATION OF FIREFIGHTERS' AND EMERGENCY SERVICE EQUIPMENT

- A. Two-Way Voice Telephone Type Cab-Communication System:
 1. Install the system in accordance with the Company's

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printed instructions.

2. Locate central equipment cabinet and battery in elevator machine room or in the car station.
- B. Test battery capacity and recharge time. Operate system for required number of hours and load conditions.

C. Firefighters' Emergency Service Operation:

Integrate components with elevator controller system for required operation.

D. Cab Emergency Light and Alarm System:

1. Locate the emergency cab light fixture in cab. Reinforce cutout in car panel for mounting of fixture.
2. Install wiring, relay, battery charger unit, contact as required to connect car emergency light unit to 120 volt power source on car, and to interconnect the 6" alarm bell on emergency light unit with emergency call button and emergency stop button in car operating panel.
3. Test battery capacity and recharge time. Operate one unit for required number of hours and load conditions.

E. Floor Number:

Paint minimum 4" high white gloss enamel numerals on back of each hoistway door and on elevator shaft walls between each floor.

3.08 WIRING INSTALLATION

A. Raceway Installation:

1. Raceway Type and Location:

- a. Install ferrous metal conduit in all locations unless otherwise specified.

b. Flexible Metal Conduit:

1. Use for short runs to equipment such as interlock, limit switch or other item requiring adjustment (dry location).

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2. Use one to two feet of flexible metal conduit for final connection to equipment subject to vibration (dry location).
- c. Liquid-tight Flexible Metal Conduit:
 1. Use for short run to equipment such as interlock, limit switch or other item requiring adjustment (damp and wet location).
 2. Use for one to two foot of Liquid-tight flexible metal conduit for final conduit connection to equipment subject to vibration (damp and wet location).
- B. Wire-way:
 1. Conductor Installation:
 2. Wiring can be installed in raceway for:
 - a. Traveling cable connecting the car and hoistway wiring.
 - b. As permitted otherwise by the exception to National Electric Code Article 620-21.
 - c. Elevator control wiring in the machine room.
 3. Traveling Cable: Terminate end of traveling cable in NEMA 1" junction box equipped with labeled terminal strip and strain relief device at each connection.
 4. Outlet, Junction and Pull-box Installation:
 - a. Boxes for Concealed Conduit System:
 - b. Install box of depth to suit job condition and also comply with Article 370 of the National Electrical Code.
 - c. Use galvanized steel box with flush cover for junction and pull box.
 5. Box For Exposed Conduit System:
 - a. Use box for the Work with conduit size $\frac{1}{2}$ ", $\frac{3}{4}$ "

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and 1".

- b. Use box for the Work with conduit size over 1" in wet location.
 - c. Use galvanized steel junction and pull box for Work with conduit size over 1" in dry location and damp location.
6. Specific Purpose Outlet Box: Use specific purpose outlet box to mount equipment when available and suitable for job condition.
- a. Supporting Device Installation:
7. Attachment of Conduit System:
- a. Masonry construction: Attach conduit to masonry construction by means of pipe strap or pipe clamp and masonry anchorage device.

END OF SECTION

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SECTION 21 03 01
GENERAL PROVISIONS FOR FIRE PROTECTION SYSTEMS WORK

PART 1 - GENERAL

1.01 SCOPE AND INTERPRETATION

- A. The contract and accompanying Drawings provide for the furnishing and the installation of the fire protection systems, including all accessories such as hose stations and cabinets, sprinkler heads, flow switches, fire/sprinkler booster pumps, etc.
- B. The specifications and Drawings require the Contractor, to provide all labor, materials, equipment and appurtenances to perform of all Work pertaining or incidental thereto, which is needed to complete the Work shown on the Drawings and called for in the Specifications.
- C. The complete fire protection system and the Work shall be so installed as to give proper and continuous service under all conditions, and shall be in accordance with the requirements of all public authorities having jurisdiction and to the complete satisfaction of the Commissioner. Any Work shown on the Drawings and not particularly described in the specifications, or vice versa or any Work which may be deemed necessary to complete the Contract shall be provided by Contractor as part of its Contract.
- D. For purposes of clearness and legibility, fire protection Drawings are essentially diagrammatic and size and location of equipment are drawn to scale wherever possible. The Drawings indicate size, connection points and routes of pipe. It is not intended, however, that all offsets, rises and drops are shown. Provide piping as required to fit structure, avoid obstruction, and retain clearances, headroom openings and passageways.
- E. Sprinklers shown and described on the Drawings shall be connected to water supply piping in accordance with the requirements of NFPA 13-02, Standard for the Installation of Sprinkler Systems as amended Section Q101 of Appendix Q of the 2008 NYC Building Code, despite any possible omission of indication of such piping on the plans. Any question involving the installation of such piping shall be referred to the Commissioner for resolution.
- F. Fire protection systems shall be tested in accordance with the NYC Building Code and the NYC Fire Code.
- G. Installation of sprinkler systems are subject to the special inspection requirements of Chapter 9 of the NYC Building Code.

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The Contractor shall cooperate and provide access to Special Inspectors hired by the City of New York for conducting Special Inspections.

H. Scope of Work: The fire protection work of the contract shall include but shall not be limited to the following systems, equipment and services:

1. Provide a complete combined fire protection system consisting of:
 - a. Sprinkler risers and riser control valves, distribution and branch piping, drain lines, Siamese fire department connection, and all associated appurtenances and alarm devices.
2. Piping: Installation of complete sprinkler systems piping from the point of connection at a flanged fitting at the water source piping installed by the contractor. Piping includes among other things: Siamese connection and fittings, O.S & Y valves, control valves, flow switches, floor control valve assembly, drainage piping, sprinkler heads, hose station and cabinets etc.
3. Equipment and devices furnished under other Sections of the contract that are integrated with the fire protection system, including electrical devices for system monitoring and alarms, shall be piped by the contractor.
4. All valves controlling the water supply for automatic sprinkler systems and water-flow switches on all sprinkler systems shall be electrically supervised by the fire alarm system.
5. Floor Control Valves: For a sprinkler system, an approved, supervised, indicating control valves assembly shall be provided at the point of connection to the riser on each floor.
6. Testing of the sprinkler system shall be as per the provisions of Section 211313, paragraph 3.02.
7. Painting requirements for dedicated piping of sprinkler system shall be as per Section 211313.
8. Piping, Equipment Supports, and seismic bracing: To comprise all restraints, hangers, pipe guides, rods, beam clamps, brackets, pipe anchors, other attachments, floor flanges, masonry anchors, bolts, nuts, washers, and other items as required to fully support all piping and equipments installed under the contract. Provide spring hangers, seismic restraints,

and vibration mounts where recommended by equipment manufacturers, where required to meet noise abatement regulations and as necessary to prevent piping and equipment vibrations being transmitted to structure.

9. Instrumentation: Provide thermometers, pressure gauges and other items for all piping and equipment installed under the contract, as indicated on contract drawings and as necessary for operation, maintenance and adjustments.
10. Miscellaneous Work: Included shall be all items of materials, piping, controls, wiring and other miscellaneous items not specifically shown on Contract Drawings or called for herein but which are normally furnished and required for a complete installation of this type.
11. Sealing of Openings: Openings left in walls, floors, ceilings or partitions shall be sealed. Finish shall match existing adjoining finish in all respects.

1.02 CODES AND STANDARDS

- A. It shall be unlawful for any person to perform the work referred to under this Fire Protection Specifications and/or shown on the Fire Protection Contract Drawings unless such person is a licensed master fire suppression piping contractor, as permitted by the NYC Building Code and unless such work is performed under the direct and continuing supervision of a licensed master fire suppression piping contractor.
- B. Where requirements for products, materials, systems, equipment, methods and other portion of the work specified herein exceed minimum requirements of regulatory agencies having jurisdiction over the construction work, contractor shall comply with such requirements specified herein, unless specifically approved otherwise by the Commissioner.

1.03 TORCH BURNING OPERATION

- A. The storing and use of oxygen and combustible gases in conjunction with torch burning apparatus is subject to the Rules and Regulations of the Division of Fire Prevention of the Fire Department of the City of New York, latest Fire Prevention (F.P.) Directive. Fire watches shall be provided during all operations using torches for burning, cutting or welding.
- B. Contractor shall apply for and obtain permits for the use and storage of such equipment on school premises. The operator of such equipment shall have a certificate of fitness issued by the Fire Department.

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- C. The cost of permits, certificates, fire watches, apparatus and other items required in the torch burning operation shall be borne by Contractor at no additional cost to the Commissioner.

1.04 PROTECTION OF MATERIALS AND WORK

A. New Building

1. Open ends of piping shall be temporarily closed by a proper fitting, until piping is approved and ready for service.
2. Motors and appurtenances shall be covered and protected during the progress of the Work.

1.05 GUARANTEES AND WARRANTIES

- A. Contractor's Guarantees: Contractor guarantees that all Work of the contract is free from all defects, and is as specified, and that should any defects, which cannot be proven to have been caused by improper use, develop within the space of one year from the date of substantial completion of the Work, such defects shall be made good by Contractor, free of cost to the City of New York.

1.06 OPENINGS AND CHASES

- A. Openings through exterior foundation walls shall be made watertight by the Contractor after pipes, conduits and other items passing through the wall have been installed. This building is planned and detailed, and is the intent of these specifications to provide a structure that will prevent the penetration by rodents and vermin of any vacant space where they might find a harborage. Contractor will be held responsible for securing this condition by the closing of all points of access to such spaces, including the passage of piping and conduits, through all walls, partitions, ceilings and furred out spaces, the closing of access to voids in hollow tile or cinder blocks. There shall be a special inspection of the building with regard to this matter before final acceptance.

1.07 INSTRUCTION OF FACILITY MANAGER

- A. After the fire protection system has been tested, and all other items adjusted and operating properly to the satisfaction of the Commissioner, Contractor shall furnish a competent person to instruct the staff in the operation and maintenance of the systems. Contractor shall video record all the training sessions for various equipment and systems as specified in individual sections of these Specifications. Determination of the date and time of such instruction shall be under the direction of the Commissioner.

1.08 CLEANING AND REPAIR

- A. At the completion of the Work and before the final inspection is made the Contractor shall thoroughly flush the system and leave it free from all marks, scratches, stains, and other damage. All equipment shall be cleaned and left in condition to operate, and the work, as a whole, left in perfect working order. Remove all tools, debris and excess materials from the premises.
- B. Contractor shall not leave sharp exposed metal edges (bottom of threaded rods, equipment supports, etc.) that could otherwise present safety hazards to the building's occupants/work staff.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

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SECTION 211313
SPRINKLER SYSTEMS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide an automatic sprinkler system as specified herein, as shown on the Drawings and as needed for a complete and proper installation.

1.02 RELATED SECTIONS

- A. Division 21 Sections

1.03 REFERENCES

- A. NFPA 13 - National Fire Protection Association Standard for the Installation of Sprinkler Systems.

1.04 SYSTEM DESCRIPTION

- A. Type of System:
1. Wet System - Pipe Schedule.
- B. Occupancy Classification:
1. Ordinary Hazard Occupancy.

1.05 SUPPLEMENTAL SUBMITTALS

- A. Submit copies of all permits and approved drawings issued by the New York City Building Department.
- B. Shop Drawings
1. Complete sprinkler system layout indicating the locations of sprinkler heads, devices, and accessories. Include separate details of special or not easily visualized piping arrangements and inspector's test valves and connections.
 2. Wiring Diagrams: Power, signal, and control wiring. Differentiate between manufacturer-installed and field-installed wiring.
- C. Test Reports as specified in the Field Quality Control Article.
- D. Certification of Installation: Submit certificate upon completion of sprinkler work, which indicates that work

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has been tested in accordance with The New York City Building Department, NFPA 13, and also that system is operational, complete and has no defects.

- E. Maintenance data: Include an instruction manual describing the operation and maintenance of the system in the maintenance manual.
- F. Maintenance materials: Sprinkler heads, steel cabinet, wrench, caps and chains

1.06 SUPPLEMENTAL QUALITY ASSURANCE

A. Codes and Standards

- 1. NFPA Compliance: Install fire protection systems in accordance with NFPA 13: Standard for the Installation of Sprinkler Systems.
- 2. UL Compliance: Provide sprinkler products in accordance with UL standards; provide UL label on each product.
- 3. New York City Building Code: Comply with the requirements of The New York City Building Code and with the Rules and Regulations of the Building Department, The Division of Fire Prevention of the Fire Department and all other public authorities having jurisdiction.
- 4. Fire Department/Marshal Compliance: Install sprinkler systems in accordance with local regulations of Fire Department or Fire Marshal.

B. Qualifications: The persons employed to perform the Work of this Section and their supervisor shall be personally experienced in sprinkler work while in the employ of a company or companies engaged in the installation of sprinkler systems.

C. Regulatory Requirements:

- 1. Materials for the Work of this Section shall be Underwriter's Laboratories listed, and/or Factory Mutual approved.

D. Certification: NFPA Contractor's Material and Test Certificate.

1.07 EXTRA MATERIALS

- A. Heads: For each style and temperature range required, furnish additional sprinkler heads, amounting to six heads when fewer than 300 heads are installed and twelve

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heads when between 300 and 1200 heads are installed. All the spare heads will be enclosed in a steel cabinet with a special sprinkler wrench to be delivered to the City of New York. Obtain a receipt.

PART 2 - PRODUCTS

2.01 PIPING

A. General:

1. Provide piping materials and factory fabricated piping products of sizes, types, pressure and temperature ratings, and capacities as indicated on the Drawings.
2. Provide fittings of materials that match pipe materials used in the sprinkler systems.

B. Identification: Provide identification complying with Section 22 05 53: Piping Identification in accordance with the following listing:

1. Fire Protection Piping: Plastic pipe markers.
2. Fire Protection Valves: Plastic valve tags.
3. Fire Protection Signs: Provide the following signs:
 - a. At each sprinkler valve, sign indicating what portion of system valve controls.
 - b. At each outside alarm device, sign indicating whom to call if device is activated.

C. Piping: All sprinkler piping shall be UL Listed and FM approved. Provide pipes, fittings, specialties, supports and anchors as shown on the Drawings, and in accordance with the following:

1. Black Steel Pipe: Schedule 40 Class 125, cast-iron threaded fittings, threaded joints; grooved pipe, mechanical coupling type fittings as noted below.
 - a. Steel Pipe for Threading: Standard weight, Schedule 40, Type F, E or S, black; ASTM A53, ASTM A135 or A106.
2. Adjustable steel clevis hangers, adjustable steel band hangers or adjustable band hangers for horizontal-piping hangers and supports.

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- a. Two-bolt riser clamps for vertical piping supports.
- b. Steel turnbuckles and malleable iron sockets for hanger-rod attachments.
- c. Concrete inserts, top-beam C-clamps, side beam or channel clamps or center beam clamps for building attachments. C-type clamps used to attach hangers to the building structure in areas subject to earthquakes shall be equipped with a retaining strap or safety hook to prevent movement. See Figure 7-7 of ASHRAE Practical Guide to Seismic Restraint, 1999. C-type clamps, with or without retaining straps, shall not be used to attach braces to the building structure.

The seismic bracing of sprinkler piping is governed by Article 3-5.3 of ANSI/NFPA No.13, Standard for the Installation of Sprinkler Systems-1989 as modified by Reference Standard RS 17-2 of the Building Code of the City of New York. Reference Section 21 05 48, Vibration and Seismic Controls for Fire-Suppression Piping and Equipment.

2.02 VALVES AND ACCESSORIES

- A. Valves: Provide valves shown on the Drawings and needed for a proper installation.
 1. Gate Valves (175 psig non-shock working pressure):
 - a. 3/4 inch to 2 inch: Bronze body, OS & Y indicating type; double or wedge disc with threaded ends.
 - b. 2-1/2 inch and larger: IBBM, OS & Y indicating type; double or wedge disc with end connections as required to suit the piping system.
 2. Check Valves: IBBM, single clapper swing check with metal to metal or rubber faced checks, suitable for horizontal and vertical installation; end connections as required to suit the piping system; 175 psig non-shock working pressure.
 - a. Ball Drip (where shown on Drawings): Brass, automatic; threaded on both ends.
 3. Inspector's Test Outlet Valve: Ball type, bronze

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body, Type 316 stainless steel ball and stem, Teflon seats and stem packing, 400 psi WOG. Valve shall have padlocking feature in both the open and closed position.

4. Valve Locking Devices:

- a. Chain: 3/16 inch galvanized steel, welded link.
- b. Padlock: Series 800 by Yale, Eaton Corp., Charlotte, NC: Key all locks alike. Furnish 2 keys for each lock.
- c. Key Tags: 1-1/2 inch dia., brass, stamped with valve number and service.
- d. "S" Hooks: Brass, for securing keys to key tags.

B. Special Valves

1. Provide valves, UL listed, in accordance with the following listing. Provide sizes and types that mate and match piping and equipment connections.
 - a. Alarm Check Valve: Provide cast-iron water flow alarm check valve, 175 psi working pressure.
 1. Two piece cast iron body, bolted and gasketed.
 2. Moving parts brass, bronze, or stainless steel with replaceable rubber clapper facing.
 3. Right or left hand trimming as required.
 4. Suitable for horizontal or vertical installation.
 5. Two pressure gages.
 6. Main drain tap.
 7. Alarm retarding chamber for water motor alarm device and electric alarm pressure switch.
 8. Factory finish with corrosion resistant red paint.
 9. Trim Package: Angle valve, globe valve, alarm line strainer, orifice restriction,

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pipe nipples and fittings.

- C. Pressure Gages: Range of 2 times system working pressure at point where installed. Equip with gage cock and provisions for draining.
- D. Inspector's Test Connection: Cast brass, capped, sprinkler line tester fitting; Elkhart Brass Mfg. Co.'s No. 112, or Seco Mfg., Inc.'s No. 445 or 446.

2.03 SPRINKLER HEADS AND APPURTENANCES

- A. Sprinkler Heads: Brass or bronze, with standard 1/2 inch orifice, and deflector:
 - 1. Upright or Pendent Type: Deflector designed to distribute water downward in a uniform hemispherical spray pattern.
 - 2. Flush Pendent Type: All or part of sprinkler body including shank thread mounts above lower plane of finished ceiling.
 - 3. Sidewall Type: Horizontal or vertical sprinklers with special deflectors designed to discharge most of the water away from nearby wall in a pattern resembling 1/4 of a sphere with a small portion of discharge directed at wall behind sprinkler.
 - 4. Markings: Stamp sprinkler type on deflector in addition to NFPA's color code requirements covering temperature classification.
 - 5. Finish for Upright, Pendent and Recess Pendent: chrome plate for occupied areas, cast or plain brass for unoccupied areas.
- B. Approved Manufacturers:
 - Firematic Sprinkler Devices, Inc.
 - Anvil International / Anvil Star
 - Viking Corp.
 - Reliable Automatic Sprinkler Co.
 - Victaulic Co. of America.
- C. Sprinkler Guards For Exposed Piping: Welded steel wire cage with cast or pressed steel base plate and suitable retaining clamps.
 - 1. Finish: Paint to match sprinkler piping.

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2.04 WATER FLOW ALARM DEVICE

- A. Vane Type Waterflow Switch: Autocall Div., Federal Signal Corp.'s 4160, Potter Electric Signal Co.'s VSR-F, or Reliable's Model A., having:
1. Corrosion-resistant vane.
 2. Splash/dust resistant enclosure with anti-tamper switch.
 3. Adjustable pneumatic retard.
 4. Screw type wiring terminals.
 5. Switch rated minimum 7.0 amps at 125 V ac and 0.25 amps at 125 V dc.

2.05 VALVE SUPERVISORY SWITCHES

- A. Mechanically actuated, designed to close contacts and sound an alarm when supervised valve is closed and when switch cover removed.
1. For Gate Valves: Potter Electric Signal Co.'s OSYSU-A, or Grinnell's F640.

PART 3 - EXECUTION

3.01 SUPPLEMENTAL INSTALLATION

- A. Approval of Sprinkler System: All necessary permits for work in connection with the installation of the sprinkler system shall be obtained by the Contractor before commencing any of the sprinkler work. The City of New York will prepare and submit plans to the Building Department and obtain approval of the sprinkler system.
- B. Installation of Identification
1. Install fire protection signs on sprinkler system in accordance with NYC Building Code, NFPA 13 requirements.
 2. Each valve in the sprinkler system shall be tagged in accordance with the requirements of The New York City Building Code and The Board of Standards and Appeals.
- C. Piping Installation

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1. Comply with requirements of NFPA 13 for installation of sprinkler piping materials. Install piping products where indicated, in accordance with manufacturer's written instructions and in accordance with recognized industry practices to ensure that piping systems comply with requirements and serve intended purposes.
2. Coordinate with other work including plumbing piping, as necessary to interface components of sprinkler piping properly with other work.
3. Install drain piping at low points of piping systems and at the alarm valve, a valve drain connection that will be carried down to the floor to discharge into the nearest floor drain, unless otherwise shown on the Drawings. Low points of sprinkler piping that cannot be drained through the alarm valve drain or when there is no alarm valve, shall also be provided with drains as may be shown on the Drawings or as required.
4. Install valved hose connections of sizes indicated, or 3/4" size if not otherwise indicated, on sprinkler at ends of branch lines and cross mains at locations where indicated on the Drawings.
5. Install Inspector's test connection where indicated, or at most remote point from riser.

D. Installation of Valves

1. Install alarm valves and water flow detectors where indicated on the Drawings.
2. Valves shall have built-in tamper switches for use in applications where supervision of the open position of the valve may be desired. The tamper switch is operated by a cam connected to the valve stem. The Contractor should make certain that the valve disc when fully open does not interfere with the operation of other system components immediately adjacent to the valve.

E. Installation of Electrical Devices: Provide wiring requirements for electrical wiring of control panel, bells, valves, tamper switch, alarm valves, and water flow detectors.

F. Installation of Sprinkler Head

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1. Install sprinkler head at the proper position shown on the Drawings, or as required. Install concealed type sprinkler heads with factory painted white cover plate in areas with suspended ceilings. Install recessed type sprinkler head with manufacturer supply escutcheon.
2. Install sprinkler piping, heads, and all other items and accessories to clear electric lighting fixtures.

3.02 FIELD QUALITY CONTROL/INTERDISCIPLINARY TESTS AND FUNCTIONAL PERFORMANCE TESTS

A. Sprinkler Piping Flushing

Prior to connecting sprinkler risers for flushing, flush water feed mains, lead-in connections and control portions of sprinkler piping. After fire sprinkler piping installation has been completed and before piping is placed in service, flush entire sprinkler system, as required to remove foreign substances, under pressure as specified in NFPA 13. Continue flushing until water is clear, and check to ensure that debris has not clogged sprinkler heads.

B. Test

1. Hydrostatic Testing: After flushing system, test fire sprinkler piping hydrostatically, for period of 1 hour, at not less than 200 psi at the lowest cross connection to the siamese connection and at a pressure of not less than 100 psi at the top most sprinkler head. Check system for leakage of joints. Measure hydrostatic pressure at low point of each system or zone being tested.
2. Repair or replace piping system as required to eliminate leakage in accordance with NFPA standards for "little or no leakage" and retest as specified to demonstrate compliance.
3. Test the entire sprinkler installation, including sprinkler alarm system, in accordance with the requirements of the Building Code and give at least 2 days advance notice in writing of tests and inspections to the Commissioner. Tests shall be conducted in the presence of the Commissioner, Fire Department and any other public authority having jurisdiction. All tests shall be performed as part of this contract.

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**C. Interdisciplinary Pre-Start-Up and Start-Up Tests/
Inspections:**

The Contractor shall conduct interdisciplinary pre-start up and start up tests/inspections (ex. verifying correct seismic restraint installations, verifying correct installation of sprinkler flow detectors and alarm gong) as per the manufacturer's start up procedures. Contractor shall submit signed start up affidavit signed by the factory authorized service representative/Contractor's seismic P.E. certification indicating that all of the manufacturer's pre-start up and start up procedures have been successfully completed.

D. Functional Performance Tests:

Contractor shall also submit signed functional performance testing affidavit signed by the factory authorized service representative indicating that all of the manufacturer's functional performance tests (flushing, hydrostatic tests and testing of the sprinkler alarm system activation) have been successfully completed.

END OF SECTION

SECTION 22 04 01
GENERAL PROVISIONS FOR PLUMBING WORK

1.01 SCOPE AND INTERPRETATION

- A. These Specifications and accompanying Drawings provide for the furnishing, setting and connection of sanitary fixtures, the installation of drainage and water supply systems.
- B. The specifications and Drawings require the Contractor to provide all labor, materials, equipment and appliances to perform of all Work pertaining or incidental thereto, which is needed to complete the Work shown on the Drawings and called for in the Specifications.
- C. The complete systems and the Work shall be so installed as to give proper and continuous service under all conditions, and shall be in accordance with the requirements of all public authorities having jurisdiction and to the complete satisfaction of the Commissioner. Any Work shown on the Drawings and not particularly described in the specifications, or vice versa or any Work which may be deemed necessary to complete the Contract shall be provided by the Contractor as part of its Contract.
- D. For purposes of clearness and legibility, plumbing Drawings are essentially diagrammatic and size and location of equipment are drawn to scale wherever possible. The Drawings indicate size, connection points and routes of pipe. It is not intended, however, that all offsets, rises and drops are shown. Provide piping as required to fit structure, avoid obstruction, and retain clearances, headroom openings and passageways.
- E. Fixtures shown and described on the Drawings shall be connected with waste, vent and water supply piping in accordance with the requirements of New-York City Building Code, despite the omission of indication of such piping on the plans. Any question involving the installation of such piping shall be referred to the Commissioner for resolution.
- F. Fixtures, piping and other plumbing items which are shown and described on the Drawings and are not specifically labeled "Future" or "N.I.C." shall be provided by the Contractor. Related Work necessary for the proper installation shall be performed by the Contractor.
- G. Scope of Work: The plumbing and drainage work of the contract shall include but shall not be limited to the following systems, equipment and services:
1. Cold Water Service Piping: (Main domestic service): Complete piping system including O. S. & Y. valve,

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check valves, water service meter assembly and an approved backflow preventer device.

2. Fire Service Piping: Complete piping system including curb valve and box & signs from connection to city water main and ending within building with a service header consisting of O.S. &Y. valve, check valve, connection to domestic water service, and a fire service double detector check valve assembly.

Note: If the two (2) water services are fed from one street main, a sectional valve should be installed per DEP requirements and approvals.

3. Fire Service Double Detector Check Valve Assembly: Complete with approved double detector check valve, strainer, valves, pipe and fittings.
4. Piping, Equipment Supports, and seismic restraints: To comprise all restraints, hangers, pipe guides, rods, beam clamps, brackets, pipe anchors, other attachments, floor flanges, masonry anchors, bolts, nuts, washers, and other items as required to fully support all piping, and equipment installed under the contract inclusive of spring hangers, seismic restraints, and vibration mounts where recommended by equipment manufacturers, where required to meet noise abatement regulations and as necessary to prevent piping and equipment vibrations being transmitted to structure.
6. Provide unions and stop valves at all equipment connections and where required for service, repairs and draining.
7. Piping - General: Piping, Piping installation or hook-up shall mean a complete installation in all respects including pipe, fittings, valves, unions, traps, strainers, specialties and other miscellaneous items to make piping systems and equipment operational.
8. Instrumentation: Provide thermometers, pressure gauges and other items for all piping and equipment installed under the contract, as indicated on contract drawings and as necessary for operation, maintenance and adjustments.
9. Insulation, Painting and Identification: As specified in their respective sections of the contract.
10. Miscellaneous Work: Included shall be all items of materials, piping, controls, wiring and other miscellaneous items not specifically shown on Contract Drawings or called for herein but which are normally furnished and required for a complete installation of this type.

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11. Tests: The Contractor shall perform pressure, performance and operating tests and other tests as hereinafter specified, as directed by the Commissioner and as required by agencies having jurisdiction as specified in Section 220800 "Cleaning and Testing".
12. Sealing of Openings: Openings left in walls, floors, ceilings or partitions shall be sealed. Finish shall match existing adjoining finish in all respects.

1.02 CODES AND STANDARDS

- A. It shall be unlawful for any person to perform the work referred to under this Plumbing and Drainage Specifications and/or shown on the Plumbing and Drainage Contract Drawings unless such person is a licensed master plumber, partnership, corporation or other business association as permitted by the NYC Building Code and unless such work is performed under the direct and continuing supervision of a licensed master plumber.
- B. Where requirements for products, materials, systems, equipment, methods and other portion of the work specified herein exceed minimum requirements of regulatory agencies having jurisdiction over the construction work, contractor shall comply with such requirements specified herein, unless specifically approved otherwise by the Commissioner.

1.03 TORCH BURNING OPERATION

- A. The storing and use of oxygen and combustible gases in conjunction with torch burning apparatus is subject to the Rules and Regulations of the Division of Fire Prevention of the Fire Department of the City of New York, latest Fire Prevention (F.P.) Directive. Fire watches shall be provided during all operations using torches for burning, cutting or welding.
- B. Contractor shall apply for and obtain permits for the use and storage of such equipment on school premises. The operator of such equipment shall have a certificate of fitness issued by the Fire Department.
- C. The cost of permits, certificates, fire watches, apparatus and other items required in the torch burning operation shall be borne by the Contractor at no additional cost to the Commissioner.

1.04 PROTECTION OF MATERIALS AND WORK

- A. New Building
 1. Open ends of piping shall be temporarily closed by a proper fitting, until piping is approved and ready for service. The use of water closets and other plumbing

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fixtures during the progress of the Work is strictly prohibited.

2. Motors and appurtenances shall be covered and protected during the progress of the Work.

1.05 GUARANTEES AND WARRANTIES

- A. Contractor's Guarantees: The Contractor guarantees that all Work of the contract is free from all defects, and is as specified, and that should any defects, which cannot be proven to have been caused by improper use, develop within the space of one year from the date of substantial completion of the Work, such defects shall be made good by the Contractor, free of cost to the DDC.

1.06 OPENINGS AND CHASES

- A. Openings through exterior foundation walls shall be made watertight by the Contractor after pipes, conduits and other items passing through the wall have been installed. This building is planned and detailed, and is the intent of these specifications to provide a structure that will prevent the penetration by rodents and vermin of any vacant space where they might find a harborage. The Contractor will be held responsible for securing this condition by the closing of all points of access to such spaces, including the passage of piping and conduits, through all walls, partitions, ceilings and furred out spaces, the closing of access to voids in hollow tile or cinder blocks. There shall be a special inspection of the building with regard to this matter before final acceptance.

1.07 INSTRUCTION OF FACILITY MANAGER

- A. After the plumbing, drainage, and gas systems have been tested, and fixtures, apparatus and all other items adjusted and operating properly to the satisfaction of the Commissioner, Contractor shall furnish a competent person to instruct the Facility staff in the operation and maintenance of the systems. Contractor shall video record all the training sessions for various equipment and systems as specified in individual sections of these Specifications. Determination of the date and time of such instruction shall be under the direction of the Commissioner's Representative.

1.08 CLEANING AND REPAIR

- A. At the completion of the Work and before the final inspection is made the Contractor shall thoroughly clean all fixtures, apparatus, appurtenances, piping, brass and chrome and nickel-plated work, marble and stone work, and leave these items free from all marks, scratches, stains,

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and other damage. All pumps, filters, heaters, and other equipment shall be cleaned and left in condition to operate, and the work, as a whole, left in perfect working order. Remove all tools, debris and excess materials from the premises.

- B. Contractor shall not leave sharp exposed metal edges (bottom of threaded rods, P&D equipment supports, etc.) that could otherwise present safety hazards to the building's occupants/work staff.

END OF SECTION

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SECTION 22 04 10
PLUMBING PIPING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Extent of plumbing piping work is indicated on Drawings and by the requirements of this Section including but is not limited to the following:

1. Pipe
2. Fittings
3. Piping Joints
4. Sleeves for Pipes
5. Unions
6. Escutcheon Plates
7. Hose Bibbs

1.02 CODES AND STANDARDS

A. Comply with applicable portions of the Building Code of the City of New York. Where requirements for products, materials, equipment, methods and other portion of the work specified herein exceed minimum requirements of N.Y.City Building Code, contractor shall comply with such requirements specified herein, unless specifically approved otherwise by the Commissioner.

B. Standards listed below are referenced in this section.

1. American Society for Testing and Materials (ASTM)
2. American Standards Association (ASA)
3. American National Standards Institute (ANSI)
4. United States of America Standards Institute (USASI)
5. Cast Iron Soil Pipe Institute (CISPI)
6. American Water Works Association (AWWA)
7. NSF International

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C. Brazing: Certify brazing procedures and brazers.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver pipe materials properly protected, and undamaged.
- B. Properly protect all piping so as to prevent damage to the pipe or the introduction of foreign material into the pipe. For the purpose of protecting piping from pre-installation contamination, all piping shall be shipped to job site with suitable caps, sheet metal covers or plugs. Pipe caps shall not be removed until just before installation.
- C. Examine all pipe and fittings before laying. Do not install any piece that is found to be defective.

1.05 SUBMITTALS

- A. Submit manufacturer's instructions for installation of fire stop materials for sleeves for pipes.
- B. Submit Shop Drawings for all piping installations
- C. Pipe Schedule: Itemize pipe and fitting materials for each specified application.
- D. Brazing Certifications: Submit as required for piping work.
- E. Product Data
 - 1. Escutcheons
 - 2. Pipe & fittings

OR

Submit a compliance affidavit, if pipe and fittings match contract documents. Manufacturer's technical product data submission will be required if a substitution is proposed.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Piping shall conform to the following:
 - 1. Steel Pipe
 - a. Black steel pipe and galvanized steel pipe shall be Grade A, seamless, electric resistance welded pipe, or type F furnace butt-welded, and shall be made in accordance

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with the current Edition of the ASTM A53. Pipe shall be free from scale, and rust, injurious sand marks, blisters, scale pits, laminations, imperfect welds, or other defects that might affect its strength, appearance or ability to resist corrosion. The maker's name shall be rolled or stamped in the metal at intervals of each length of pipe 2" and larger, and stamped on a metal tag secured to each bundle of pipe 1¹/₂" and smaller.

- b. Unless otherwise specified or indicated on Drawings, black steel pipe shall be standard weight and galvanized steel pipe shall be Schedule 40 galv. pipe.
- c. Available Manufacturers:

U.S. Steel Co.
Sawhill Tubular Co.
North Star Steel
Sharon Tube Co.
Koppel Steel Corp.
Or approved equal.

2. Brass Pipe

- a. Seamless drawn red-brass pipe made in accordance with the current edition of ASTM B43 and of an alloy containing not less than eighty-five (85%) copper and not more than 0.05% lead, semi-annealed, regular weight. Pipe to be threaded on both ends with NPT (Taper Pipe Threads) conforming to ANSI B2.1. The maker's name shall be stamped at intervals on each length of pipe and the pipe shall be color-coded White in accordance with The Copper and Brass Research Association standards.
- b. Manufacturers for Brass Pipes and Copper Tubings:

Chase Brass & Copper Co.
Phelps Dodge Copper Products Corp.
Revere Copper & Brass Inc.
Or approved equal.

- 3. Copper Tubing Type "K": Tubing shall be hard drawn seamless tubing manufactured in 20 foot lengths, in accordance with the Copper Development Association and ASTM B88, for below ground use only. Each tube

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shall be identified by means of color bars, green, running full length of each tube.

4. Copper Tubing Type "L": Tubing shall be hard drawn seamless tubing manufactured in 20 foot lengths, in accordance with the Copper Development Association and ASTM B88, for above ground use only. Each tube shall be identified by means of color bars, blue, running full length of each tube.
5. Ductile Iron Pipe
 - a. Ductile iron pipe shall have an outer coating of coal tar and shall comply with the requirements of the latest Standard Specifications of **AWWA C151**.
 - b. Thickness class of pipe shall be as follows:
 - 1) Yard Drainage: thickness class 51 for all sizes
 - 2) House Sewers: thickness class 56 for all sizes
 - 3) Water Service piping: thickness class 52 for three (3) & four (4) inch diameter pipe and thickness class 56 for pipe size greater than four (4) inch.
 - c. Ductile iron pipe shall also comply with the following requirements:
 - 1) Marking: the weight and class and other designated markings required by ANSI specifications shall be stenciled at the foundry on all ductile iron pipe, fittings and specials.

Markings shall be painted conspicuously in white on the outside of each pipe length, fitting and special casting after the shop coat has hardened.
 - 2) Cement Lining: Pipe to be cement lined, except when used in association with sewer piping, in accordance with **AWWA C104** with thickness of lining to be 1/8" minimum. A plus tolerance of 1/8" shall be permitted on all sizes of pipe.
 - d. Manufacturers:

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1. U.S. Pipe and Foundry
2. American Cast Iron Foundry
3. Amstead Industries
4. Or approved equal.

B. Fittings And Joints

1. Fittings And Joints for Ductile Iron Pipe

- a. Jointing for water carrying pipe shall be mechanical type consisting of bell end with cast flange, cast iron gland, rubber gasket and necessary bolts and nuts. Mechanical joints shall conform to AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern and gaskets to AWWA C111. Bolts shall be high-strength, low-alloy steel with minimum 45,000 psi yield strength and comply with AWWA C111. Unless otherwise specified, gasket material shall be rubber.
- b. Push-on joints shall conform to AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern and gaskets to AWWA C111. Push-on joints shall also be restrained using Field- Flange 350 fitting and Field-Lok 350 gasket assembly as manufactured by U.S. Pipe or other approved equal. Unless otherwise specified, gasket material shall be rubber. Push-on Joints shall be Bell-Tite Joint of Griffin Pipe Product Co. or Tyton Joint of U.S. Pipe and Foundry or Fastite Joint of American Cast Iron Pipe Company.
- c. Fittings, joints and accessories for ductile iron shall comply with the requirements of the latest Standard Specifications of ANSI A21.10 and ANSI A21.11. Fittings for mechanical or push-on joints shall be similar to Tyton Joint by U.S. Pipe or Bell-Tite by Griffin Pipe, NACIP, Inc., or approved equal.

2. Fittings for Galvanized Pipe:

Fittings and couplings shall be galvanized cast-iron, recessed and threaded drainage fittings conforming to ASTM A126, Class B, with smooth interior waterway and with threads tapped so as to give a uniform grade to branches of not less than 1/4" to the foot and keep the vertical lines plumb. Fittings for screwed vent piping shall be malleable iron recessed and threaded drainage fittings.

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3. Fittings for brass water supply piping shall be cast bronze threaded fittings, Class 125 working steam pressure, conforming to ANSI B16.15. They shall be made of cast bronze containing not less than eighty-five percent (85%) copper and five percent (5%) each of lead, tin and zinc. All connecting threads of pipes and fittings shall be NPT conforming to the requirements of ANSI B2.1. Exposed fittings for fixture connections shall be rough, plain, polished or chromium plated as specified.
4. Fittings for Type "K" copper tubing shall be cast bronze solder joint fittings suitable for soft-soldering and shall be in accordance with ANSI Std. B16.18-1973. Fittings for Type "L" copper tubing shall be wrought copper solder joint fittings suitable for soft-soldering and shall be in accordance with ANSI B16.22-1973. Type "K" and Type "L" fittings shall have a minimum working water pressure of 150 p.s.i. and shall be as manufactured by Nibco Inc., Stanley G. Flagg & Co., Smith-Cooper International, or approved equal.

Solder shall be lead-free solder as per ASTM B-32

C. Water service pipe, water distribution pipe and all pipe fittings utilized in water supply systems shall conform to NSF 61

D. Pipe Nipples

1. All pipe nipples shall be of the same materials as the connecting piping.
2. The use of close nipples is prohibited

E. Unions

1. Unions 2" and smaller shall be threaded. Unions 2¹/₂" and larger shall be flanged.
2. Threaded unions on copper or brass pipe shall be brass, ground joint suitable for 300 pounds W.S.P.
3. Threaded unions on steel pipe, unless otherwise specified, shall be of malleable iron with bronze ground seats suitable for 300 pounds W.S.P.
4. Flanged unions shall be cast iron for steel pipe, and brass for copper or brass pipe, gasket type suitable for 150 pounds W.S.P.

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5. Flanged unions shall be provided with the necessary steel bolts, nuts and gaskets.
6. All unions used on galvanized piping shall be galvanized.
7. All unions used on chromium plated piping shall be chromium plated.
8. Unions shall be as manufactured by Stanley G. Flagg & Co., Inc., Stockham , Dart or approved equal.

F. Dielectric Fittings/Unions

1. Unions shall be rated at 250 psi at 180° F. and shall meet the requirements of ANSI B16.39. Pipe threads shall be in accordance with ANSI B2.1 and solder ends shall be suitable for brazing.
2. Flange fittings shall have a minimum rating of 175 psi and shall conform to ANSI B16.24 (Bronze), B16.42 (Iron).

3. Manufacturers:

B&K Industries, Inc.
Capitol Mfg. Co.; Division of Harsco Copr.
Eclipse, Inc.
Perfection
Or approved equal.

- G. Gaskets: Gaskets for cold and hot water services shall be full face gaskets. The retaining gasket shall be made of 1175 fabric inserted rubber sheeting and shall be pre-cut at the factory for standard 125 pound cast iron flanges and fittings and for 150 pound raised face steel flanges and fittings.

H. Sleeves for Pipes

1. Sleeves and materials for sealing sleeves for gas piping through exterior walls and floor slabs on earth shall be as specified and approved by the Gas Company.
2. Sheet metal sleeves shall be 20 gauge.
3. Pipe sleeves shall be service weight cast iron pipe or schedule 40 galvanized steel pipe.

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4. Fire stop penetration materials for sealing sleeves shall be listed by Underwriters Laboratories.
5. Material for sealing spaces between pipe and sleeve through foundation walls below grade shall be Link-Seal Type "C" as manufactured by Thunderline Corp; Innerlynx by Advance Products & Systems, Inc.; Pipe Linx by Calpico, Inc., or approved equal. Seals shall be modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill the annular space between the pipe and sleeve. Links shall be loosely assembled with bolts to form a continuous rubber bolt around the pipe with a pressure plate under each bolt head and nut. Link-Seal pressure plates shall be Type "C" (insulating type) to provide for electrical insulation and cathodic protection.
6. Materials for sealing space between each pipe and sleeve through non-fire rated exterior walls above grade shall be Non-shrinking cement
7. Waterproof sleeves shall be Link-Seal Wall Sleeve as manufactured by Thunderline Corp, GPT Industries, or MetraSeal wall sleeve by the Metraflex Co., or approved equal.

PART 3 - EXECUTION

3.01 PIPE AND FITTING SCHEDULE

A. Domestic Cold Water: Above Ground-Interior

1. Type L (blue color bar) copper tubing with wrought copper solder joint fittings suitable for soft soldering; Brass, seamless drawn pipe, regular weight with cast bronze fitting;

B. Domestic Water: Service Underground - Exterior & Interior

1. 2-1/2" and Less: Type K soft annealed copper tube with cast bronze solder joint fittings; Brass, seamless drawn pipe with threaded fittings.
2. 3" and Up: Ductile iron and fittings with mechanical joints

C. Fire Sprinkler: Interior

Black Steel, Standard Weight, with threaded malleable or flanged cast steel fittings. Roll grooved ends, grooved

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pipe fittings and couplings lieu of threaded and/or flanged fitting in sizes 2" and above.

Fire Sprinkler: Underground - Exterior

Ductile iron with mechanical joints coupling. Red brass threaded fitting and piping, including dielectric union, for the final connection to the free standing fire department connection.

3.02 INSTALLATION

A. Piping (General)

1. The run and arrangements of all pipes shall be approximately as shown on drawings or specified and as directed during installation, and shall be as straight and direct as possible, forming right angles or parallel lines with building walls and other pipes, and neatly spaced. No pipe shall be installed where the headroom will be interfered with unless the conditions are such that it is unavoidable and permission is obtained from the Commissioner. Offsets will be permitted where walls reduce in thickness or beams interfere with direct runs; offsets shall be made at an angle of 45° to the vertical; in no case shall the space between the pipes, partitions, walls, etc., exceed 5". All exposed risers shall be erected plumb, standing free, close to and parallel with walls and other pipes and be uniformly spaced. All horizontal runs of piping hung from structural floor, slab or floor beams shall be erected as closely as possible to bottom of floor slabs, ceilings, or I-beams as the case may be. In no case shall the headroom, beneath the pipe, be less than (7'-0") where the pipe is installed more than (1'-0") from wall, partition, etc., except where piping is required to be installed in Boiler Room and Mechanical spaces above floor. Horizontal piping shall be so graded as to drain to the low points and water lines to drain bibbs. All piping installed in floor shall be painted with a heavy coat of asphaltum. All piping shall be installed with ample space for pipe covering. All exposed plumbing piping in the Kitchen Areas shall be chrome plated brass pipe except for gas line. Provide threaded fittings. Chrome (silver) paints will not be accepted.
2. Roughing under ground or concealed in the floor or wall construction shall be properly installed, tested and inspected before any of the roughing is

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covered up. Should any work be covered up before being inspected and tested, it shall be uncovered and recovered at the expense of the Contractor. Plugged fittings shall be installed when called for. Reducer fittings shall be used in making reductions in sizes of pipes; bushings will not be allowed. Suitable air chambers or Water Hammers Arresters shall be provided as called for in other sections.

3. All lines of piping and branches for fixtures passing through or in connection with waterproofing shall be brought to the proper locations and levels so that fixtures and piping may be installed without disturbing the waterproofing.
4. For work in existing buildings the following addition requirements shall be adhered to:
 - a. Piping shall run as straight as possible with the fewest number of changes in direction, with such variations from the layout shown on the Drawings as conditions at the premises may require, as approved by the Commissioner at no extra cost to the Commissioner. Provide piping without sharp bends, quick changes of sections, pockets or bushings.
 - b. The locations of all existing piping which are indicated on the Drawings are approximate. The Contractor shall investigate and ascertain the exact locations of such piping and make whatever minor variations in runs of new piping that may be required at no extra cost to the Commissioner.
 - c. Contractor shall consider the location of all equipment, ductwork, piping, electric conduits, supports, steel work, etc., and all new piping shall be installed without interference therewith.
 - d. Wherever existing branch piping interfere with installation of new branch piping, the existing branch piping shall be removed and re-routed to accommodate the new work. The rerouted work shall be of new material.
 - e. All new extensions and relocations of existing piping systems shall be concealed in existing or new walls, floors, ceilings, pipe chases or as otherwise specified.

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- f. Unused dead ended soil, waste and vent piping shall be removed as far as each branch, main, stack, etc., and capped or plugged concealed in hung ceilings, below floors or behind walls.
- g. All individual hot and cold water branches to and from new and existing mains or risers shall be valved.

B. Piping Joints

1. Joints in Ductile Iron Pipe:

- a. Mechanical Joints: Assemble mechanical joints in accordance with Method of Installation, AWWA C111, Appendix A. Tighten all bolts by means of torque wrenches such that the follower is brought up evenly. Disassemble, clean and reassemble joint if effective sealing is not obtained at specified torques.
- b. Joints for ductile iron mechanical joint pipe shall be made by using ductile iron mechanical joint retainer glands.

2. The joints of steel and brass piping shall be screwed joints of full length and threads shall be NPT conforming to the requirements of ANSI B 2.1. All pipes shall be screwed close up to their shoulders. The use of lamp wick is prohibited in threaded joints. All burrs shall be removed. Pipe joint cement or Teflon tape shall be used only on male threads.

3. Joints in type "L" copper tubing and type "K" copper tubing shall be soft-soldered joint. All surplus flux shall be wiped off immediately after completion of the soldering.

4. Unions shall be used to connect equipment (pumps, circulators, tanks, meters, etc.) to water lines. The union shall be installed as close to the equipment as practical. Where valves are adjacent to equipment, union shall be on down stream side of valves.

12. Dielectric fittings and unions shall be installed where ferrous piping joins copper tubing or brass piping.

C. Sleeves for Pipes

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1. General: All plumbing pipes passing through floors, roofs, walls, partitions, furring, beams, trenches, and wherever else indicated on drawings shall be provided with sleeves installed and maintained by the Contractor. Core drilled holes shall be provided with sleeves. Where plumbing pipes pass through potentially wet floors that do not have membrane waterproofing such as toilet rooms, cafeteria kitchens, serving areas, dish washing room, janitor's sink closet, mechanical equipment rooms, pipe chases and areas that are provided with fire protection sprinkler systems, the Contractor shall install sleeves of galvanized steel pipe with welded clips or equivalent at bottom ends for securing sleeves to form work and shall project one inch above finished floors, and shall be caulked watertight.
 2. For interior walls and floors and for pipes through roof, the space between each installed pipe and its sleeve shall be sealed with a three hour rated fire stop penetration material. Fire stop materials shall be installed in accordance with the instructions of the manufacturer. Cast-in firestop device with Underwriters Laboratories listing and Material and Equipment Acceptance (MEA) approval is permitted as an acceptable sleeve alternative to a metallic sleeve with fire rated sealing caulk. The cast-in device is a one-step fire stopping process that shall not require additional fire stop penetration materials for sealing the sleeves. The device shall be installed where required for sleeving purposes.
 5. Pipe Sleeve: Install pipe sleeves for pipes passing through roofs, concrete beams, brick walls, foundation walls and floor slabs on earth. Sleeves shall be installed with 1/2" maximum clearance all around pipe and shall finish flush with the surfaces penetrated. Pipe sleeves for pipes through roof shall be made of service weight cast iron only.
 6. Sleeves through foundation walls below grade shall be provided under General Construction Work.
- D. Drain Bibbs: Provide drain bibbs in the following locations:
1. At the base of all water risers.
 2. At low points of water lines.

END OF SECTION

SECTION 220424
BACKFLOW PREVENTERS

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. 22 04 10 Plumbing Piping
- B. 22 05 29 Pipe Hangers and Supports

1.02 SUBMITTALS

- A. Product Data:
 - 1. Manufacturer's catalog sheets, specifications, and installation instructions for each type backflow preventer and test kit.

1.03 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Comply with the State Department of Health Sanitary Code for Cross Connection Control, and the other standards listed in Part 2 of this section.
 - 2. Where conflicts occur between the referenced standards, the most stringent requirements shall apply.

1.04 MAINTENANCE

- A. Special Tools (as furnished or recommended by the backflow preventer manufacturer). Deliver to the Commissioner Representative:
 - 1. Test Kit B: Sight tube, of required length, for testing backflow preventer for proper operation, and printed procedure for conducting test.

PART 2 PRODUCTS

2.01 BACKFLOW PREVENTERS

- A. Double Check Valve device, conforming to ASSE Standard 1015, AWWA C-510, USC specifications manual for Cross Connection control, and listed as acceptable in the New York City Department of Environmental Protection (DEP) guidelines.

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1. Performance: 175 psig, and 130 degrees F, maximum working conditions.
 2. Assembly: gate valve on inlet side, gate valve on outlet side, and four test cocks, all as furnished or recommended by the backflow preventer manufacturer.
 3. Fire service shall be a double check detector assembly.
- B. Reduce Pressure Zone (RPZ) assembly on boiler make up water pipe.
- WATTS, Model 909M1QT-S (Base of Design)
- C. Manufacturers:
Other Manufacturers: AMES, FEBCO, Wilkins. Models shall be approved by NYC DEP.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install the Work of this section in accordance with the manufacturers and NYC DEP printed installation instructions and approved construction drawings.

3.02 FIELD QUALITY CONTROL

- A. Operation Test: Test kit as specified under Part 1 of this section may be used. Conduct test in the presence of the DDC Representative.
1. Type B Backflow Preventer: Test the device with the test kit in accordance with the manufacturer's test procedure.
- B. Re-testing: Repair or replace any device failing the operation test, and repeat the test.

END OF SECTION

SECTION 220523

VALVES

PART 1 GENERAL

1.01 ABBREVIATIONS

- A. IBBM: Iron body, bronze mounted.
- B. OS&Y: Outside screw and yoke.
- C. WOG: Water, oil, gas.
- D. WSP: Working steam pressure.

1.02 SUBMITTALS

- A. Product Data: Manufacturer's catalog sheets and specifications for each valve type.
- B. Valve Schedule: List type of valve, manufacturer's model number, and size for each service application.

1.03 MAINTENANCE

- A. Special Tools:
 - 1. One wrench for each type and size wrench operated plug valve.

PART 2 PRODUCTS

2.01 VALVES - GENERAL

- A. Valve Standardization: Valves from one or more manufacturers may be used, however valves supplied for each specific valve type shall be the product of one manufacturer.
- B. Valves shall be first quality, free from all imperfections and defects, with body markings indicating manufacturer and rating.
- C. Valve parts of same manufacturer, size and type shall be interchangeable.
- D. Manually operated gate, globe and angle valves shall be of rising stem type, unless otherwise specified.
- E. Valves which use packing, shall be capable of being packed when wide open and under full working pressure.

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- F. Size valves the same size as the piping in which they are installed, unless specified otherwise.

2.02 GATE VALVES

- A. Type A: 125 psig WSP, 200 psig WOG, bronze body, union bonnet, solid wedge disc, and threaded ends. Acceptable Valves: Crane 428UB, Hammond IB617, Jenkins 47CU, Milwaukee 1152, Nibco T13, and Stockham B105.
- B. Type C: 125 psig WSP, 200 psig WOG up to 12 inch size, and 150 psig WOG for 14 inch and 16 inch sizes; IBBM OS&Y, bolted bonnet, solid wedge disc, and threaded or flanged ends depending on size. Acceptable Valves: Crane 464-1/2, 465-1/2, Hammond IR1140, Milwaukee F2885, Nibco T6170 & F6170, and Stockham G620 & G623
- C. Type D: 125 psig WSP, 200 psig WOG, bronze body, threaded bonnet, solid wedge disc, and solder ends. Acceptable Valves: Crane 1330, Hammond IB635, Jenkins 991AJ, Milwaukee 149, Nibco S111, and Stockham B108.

2.03 GLOBE AND ANGLE VALVES

- A. Type J: 125 WSP, 200 psig WOG, bronze body, threaded bonnet, and threaded ends. Acceptable Valves: Crane 1, Hammond IB440 & IB463, Jenkins 101J, Milwaukee 502, Nibco T211 & T311, and Stockham B16.
- B. Type K: 125 psig WSP, 200 psig WOG, IBBM OS&Y, bolted bonnet, and threaded or flanged ends depending on size. Acceptable Valves: Crane 351 353, Hammond IR116, Jenkins 613C & 615C, Milwaukee F2981, Nibco F718B & F818B, and Stockham G512, & G515.
- C. Type O: 125 psig, 200 psig WOG, bronze body, threaded bonnet, and solder ends. Acceptable Valves: Crane 1310, Hammond IB423, Jenkins 1200C, Milwaukee 1502, Nibco S21, and Stockham B17.

2.04 CHECK VALVES

- A. Type S: 125 psig WSP, 200 psig WOG, bronze body, brass or bronze trim, horizontal swing, renewable and regrindable disc, and threaded ends. Face discs for cold water service with teflon. Acceptable Valves: Crane 37, Hammond IB940,

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Jenkins 4092, Milwaukee 509, Nibco T413Y, and Stockham B319Y.

- B. Type U: 125 psig WSP, 200 psig WOG, bronze body, brass or bronze trim, horizontal swing, renewable and regrindable disc, and solder ends. Face discs for cold water service with teflon. Acceptable Valves: Crane 1340, Hammond IB912, Jenkins 4093, Milwaukee 1509, Nibco S413Y, and Stockham 309Y.
- C. Type V: 125 psig WSP, 200 psig WOG, IBBM, horizontal swing, bolted bonnet, regrindable and renewable seat ring and disc, and threaded or flanged ends depending on size. Discs on valves 4 inch size and larger may be cast iron with bronze face. Acceptable Valves: Crane 372, & 373, Hammond IR1124, Jenkins 623CJ & 624CJ, Milwaukee F2974, Nibco F918, and Stockham G927 & G931.
- D. Type W:
 - 1. Globe Style Silent Check Valve: IBBM or semi-steel with bronze mounting, renewable seat and disc, 18-8 stainless steel spring, and flanged ends.
 - a. Acceptable Valves (125 psig flange pressure rating): Apco Series 600, Combination Pump & Valve 20D, Hammond IR9354, Milwaukee 1800, Nibco F910, and Williams Hager 636.
 - b. Acceptable Valves (250 psig flange pressure rating): Apco Series 600, Combination Pump & Valve 21D, Milwaukee 1800, Nibco F960, and Williams Hager 636.
 - 2. Wafer Style Silent Check Valve: IBBM or semi-steel with bronze mounting, renewable seat and disc, 18-8 stainless steel spring, and flanged ends.
 - a. Acceptable Valves (125 psig flange pressure rating): Apco Series 300, Combination Pump and Valve 10D, Hammond IR9253, Milwaukee 1400, Nibco W910, and Williams Hager 329 & 375.
 - b. Acceptable Valves (250 psig flange pressure rating): Apco Series 300, Combination Pump and Valve 11D, Milwaukee 1400, Nibco W960, and Williams Hager 329 & 375.

2.05 PLUG VALVES

- A. Type AA: 200 psig WOG, lubricated type with standard port opening, cast iron or semi-steel

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body, sealed lubrication system with lubricant fitting and dial indicator, cylindrical plug or teflon tapered plug, lubricant grooves in body or plug, threaded or flanged ends depending on size, and capable of lubrication with valve under pressure and plug in any position.

1. Acceptable Valves:
 - a. 1/2 inch to 3 inch size: Homestead 611 & 612, , Resun R1430 & R1431, and Rockwell 142 & 143.
 - b. 4 inch size: Homestead 611 & 612, , Resun R1430 & R1431, and Rockwell 142 & 143.
 - c. 5 inch size: Homestead 611 & 612, Resun R1431, Rockwell 143, and Walworth 1797F.
 - d. 6 inch size: Homestead 611 & 612, , Resun R1431, Rockwell 143.
 - e. 8, 10 & 12 inch sizes: Homestead 612G, , Resun R1431WGA, Rockwell 149.
 2. Operators:
 - a. 6 inch size and Less: Wrench operator.
 - b. 8 inch size and Up: Worm gear operator.
- B. Type AB: 100 psig WOG, gas cock type with cast iron or bronze body, bronze plug, square head, wrench operator, and threaded ends. Acceptable Manufacturers: Crane, Eclipse Combustion, and McDonald.

2.06 BUTTERFLY VALVES

- A. Type BF: Iron body, flangeless wafer or lugged type, (lug for each bolt hole, drilled and tapped for cap screws), with replaceable reinforced resilient EPT (EPDM) seats, bronze or nickel plated ductile iron discs, phosphate coated steel or stainless steel stems, and raised necks able to accommodate 2 inches of insulation. Acceptable Manufacturers: Crane, Demco, De Zurik, Hammond, Keystone, Milwaukee, Nibco, Stockham, and Watts.
1. Pressure Ratings:
 - a. 12 inch size and Less: 200 psig WOG at 275 degrees F.
 - b. 14 inch size and Up: 150 psig WOG at 275 degrees F.
- B. Operators:
1. 6 inch size and Less: Manual actuator handles with external indication of disc position, and suitable means of locking actuator in any fixed position.
 2. 8 inch size and Up: Worm gear operator.

2.07 WATER PRESSURE REDUCING VALVES

- A. Main Water Service:
1. Valve shall be an adjustable, direct acting, spring loaded, diaphragm operated, single seat, bottom guided type suitable for dead end service; guaranteed not to stick and shall maintain a constant discharge pressure which will not vary more than 1 psig for each 10 psig decrease in inlet pressure. Valves shall have cast iron, mild steel or bronze bodies, with either flanged ends or screwed ends with unions. Valve trim shall be of stainless steel with renewable composition disc. Parts subject to wear shall be renewable.
 2. Material of diaphragm and disc shall be suitable for an operating temperature to 150 degrees F. The control line, from diaphragm casing, shall be connected to the discharge piping at least 10 feet downstream from pressure reducing valve. Control line shall be of same material as adjoining piping. Valves shall be standard weight for inlet pressures up to 125 psig, and extra heavy weight for inlet pressures in excess of 125 psig.
 3. Acceptable Valves: Fisher Governor Type 655A, Kieley Mueller Type 4250.
- B. Cold Water Make-Up Service:
1. Adjustable direct acting, spring loaded, diaphragm operated, single seat type conforming to ASSE 1003 - Performance Requirements for Water Pressure Reducing Valves for Domestic Water Supply Systems. Acceptable Manufacturers: Bell & Gossett, Watts, and Wilkins.
 - a. Body: Brass or bronze construction.
 - b. Wetted Parts: Brass, bronze, stainless steel, or nickel alloy construction.
 - c. Renewable seat and removable composition disc.
 - d. Integral low inlet pressure check valve.
 - e. Operating Temperature Range: 33-160 degrees F.
 - f. Maximum Working Pressure: 125 psi.
 2. Pressure reducing valves with integral strainers may be substituted for approval, in lieu of separate valve and strainer, if integral strainer and valve meet individual valve and strainer specifications.

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2.08 SAFETY AND RELIEF VALVES

- A. General Requirements: Valves shall be as specified by ASME Code governing manufacture of such valves within scope of their particular usage, i.e., Heating Boilers, Unfired Pressure Valves, etc., shall be tested, rated and listed, unless otherwise specified. Valves for applications specified shall conform to the ASME Code, Section IV, Heating Boilers and the following:
1. Valves for combination domestic hot water heater and storage tanks shall conform to the requirements of ASME Code, Section IV and USA Standard Z21.22 and shall be NBB listed. Valves shall be of the temperature - pressure type. Thermostatic element shall, on rising temperature, cause the valve to open at 200 degrees F. and valve shall deliver its rated capacity at 210 degrees F. and close drip tight at 195 degrees F. Valves shall be sized in accordance with Unfired Vessel Code.
 2. End Connections: Unless otherwise specified, safety valves, relief valves and safety relief valves, in sizes 3/4 inch to 3 inches IPS inclusive, may be furnished with male or female pipe thread inlet and female pipe thread outlet; valves over 3 inches IPS must be furnished with 125 lb. or 250 lb. flanged inlet and may be equipped with female threaded or 125 lb. flanged outlet.

2.09 NEEDLE STOP VALVES

- A. For Temperatures to 300 degrees F.: All brass or forged carbon steel construction, union bonnet, threaded ends, built for 1000 psi at 300 degrees F. Acceptable Manufacturers: Marsh Instrument Co., H.O. Trerice Co., Weksler Instruments Co.

2.10 GAGE COCKS

- A. Gage Cocks: All brass construction, "T" or lever handles, threaded ends, built for 300 psig hydraulic pressure. Acceptable Manufacturers: Marsh Instrument Company, Mueller Instruments Co., H.O. Trerice Co. and Weksler Instruments Corp.

2.11 BALL VALVES

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- A. Type BV: 150 psig WSP, 600 psig WOG, 2 piece bronze body, solid blow-out proof stem, teflon seats, chrome plated brass ball, teflon seals, corrosion resistant steel lever handles with vinyl grips, balancing stop, and threaded or solder ends. Acceptable Manufacturers: Conbraco, Hammond, Milwaukee, Nibco, and Watts.

PART 3 EXECUTION

3.01 INSTALLATION

- A. General: Install valves at locations noted on the drawings or specified.

3.02 VALVE APPLICATION SCHEDULE

- A. Schedule of valve applications for the different services is as follows:
1. Cold Water In Buildings and Tunnels (CW) 125 psig and Less:
 - a. 3 inch and Less: A or D gates or BV balls, O globes or angles, and S or U checks; or C gates, K globes or angles, and V checks, with solder joint companion flanges.
 - b. 4 inch and Up: C gates or BF butterflies, K globes or angles, and V checks.
 2. Domestic Hot Water and Circulating (DHW & DHWC) 125 psig and Less:
 - a. 3 inch and Less: A or D gates or BV balls, J or O globes or angles, and S or U checks.
 - b. 4 inch and Up: C gates or BF butterflies, K globes or angles, and V checks.
 3. Gas - Natural, Manufactured or Mixed Fuel (G) 125 psig and Less:
 - a. 2 inch and Less: AB plug valves.
 - b. 2-1/2 inch and Up: AA plug valves.

END OF SECTION

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SECTION 221119

WATER SUPPLY ACCESSORIES

PART 1 GENERAL

1.01 SUBMITTALS

- A. Product Data: Catalog sheets, specifications, dimensional data, and installation instructions for each item specified, excluding fasteners.

PART 2 PRODUCTS

2.01 WATER HAMMER ARRESTORS

- A. Hydropneumatically controlled with permanently sealed expansion chamber pre-charged with non-combustible gas, threaded connection, and conforming to ASME A112.26.1M - Water Hammer Arrestors, and ASSE 1010 - Water Hammer Arrestors.
 - 1. Bellows Type: Stainless steel construction with elastomer or stainless steel bellows.
 - 2. Piston Type: Hard drawn copper body with brass piston, cap and adapter; and elastomer seals.

2.02 HOSE BIBBS

- A. Compression type with polished chrome plated bronze body, renewable units, vacuum breaker with breakaway screw or vandal resistant fastener (ASSE 1011), removable T-handle, and integral threaded wall flange.
 - 1. Connections: 3/4 inch female threaded inlet, and 3/4 inch hose bibb outlet.

2.04 COMBINATION HOSE BIBBS

- A. Exposed, compression type with chrome plated bronze body, renewable units, bucket hook, wall brace, rigid nozzle, vacuum breaker with breakaway screw or vandal resistant fastener (ASSE 1011), four arm indexed handles, integral stops, and integral threaded wall flanges.
 - 1. Connections: 1/2 inch eccentric threaded inlets on 8 inch centers, and 3/4 inch hose bibb outlet.
 - 2. Spout Length: 10 inches from wall to center of spout outlet.

2.05 DRAIN VALVE

- A. Cast brass body with renewable units, hose bibb vacuum breaker (ASSE 1011) with drainage feature, and removable cast iron handwheel with vandal resistant fastener.
 - 1. Valve must be completely assembled to make hose connection.
 - 2. Connections: 1/2 or 3/4 inch threaded or solder end inlet, and 3/4 inch hose bibb outlet.

2.06 FASTENERS

- A. Vandal Resistant Fasteners: Torx head with center pin.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install the Work of this section in accordance with the manufacturer's printed installation instructions, unless otherwise specified.
- B. Secure external components in place with vandal resistant fasteners or devices which cannot be removed without special tools.

END OF SECTION

SECTION 220529
PIPE HANGERS AND SUPPORTS

PART 1 GENERAL

1.01 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

- A. Companion high density filler pieces for installation over the top 180 degree surface of pipe or tubing, at points of support where a combination clevis hanger, insulation shield and high density insulating saddle are installed.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Piping Insulation: Section 220700.

1.03 SUBMITTALS

- A. Shop Drawings:
1. Details of trapeze hangers and upper hanger attachments for piping 4 inches in diameter and over. Include the number and size of pipe lines to be supported on each type of trapeze hanger.
 2. Details of pipe anchors.
 3. Details and method of installing sway braces for cast iron soil pipe.
 4. Drawings identifying seismic locations with corresponding details of pre-approved seismic restraints, with seismic loads and seismic force level (Fp) calculations; pre-engineered and stamped by a NYS Licensed Professional Engineer experienced in seismic restraint systems.
- B. Product Data: Catalog sheets, specifications and installation instructions for each item specified except fasteners.
- C. Quality Control Submittals:
1. Seismic Restraint Manufacturer's Qualifications Data:
 - a. Name of firm producing the seismic restraints, business address and telephone number.
 2. Company Field Advisor Data:
 - a. Name, business address and telephone number of Company Field Advisor secured for the required services.

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- b. Certified statement from the Company listing the qualifications of the Company Field Advisor.
- c. Services and each product for which authorization is given by the Company, listed specifically for this project.
3. Manufacturer's Certificate of Compliance for Seismic Restraints: Certificate from seismic restraint manufacturer stating that the restraint and its mounting system or anchorage has been tested or analyzed and meets the requirements of NYS Building Code (Section 1621).

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements:
 1. Comply with the applicable requirements of the ASME B31 Piping Codes.
 2. Unless otherwise shown or specified, comply with the requirements of the Manufacturer's Standardization Society of the Valve and Fittings Industry (MSS) Standards SP-58, and SP-69.
 3. Materials for use in Sprinkler Systems and Standpipe and Hose Systems shall comply with the requirements of NFPA 13 and NFPA 14 as applicable.
 4. Hang and support cast iron soil pipe and fittings in accordance with the recommendations of the Cast Iron Soil Pipe's Institute's (CISPI) Cast Iron Soil Pipe and Fittings Handbook.
 5. The contractor shall provide pre-engineered or stamped and signed details (by a NYS Licensed Professional Engineer) of seismic restraint systems to meet total design lateral force requirements for support and restraint of mechanical and electrical systems.
 6. Seismic components shall be UL listed or California OSHPD (Office of Statewide Health Planning and Development) approved.
- B. Company Field Advisor: Secure the services of a Company Field Advisor from seismic restraint manufacturer for the following:
 1. Render advice regarding installation and final adjustment of seismic restraint system.

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2. Render advice on the suitability of each seismic restraint for its particular application.
3. Inspect completed installation of seismic restraint system and certify with an affidavit that the system is installed in accordance with the Contract Documents and is operating properly.
4. Train facility maintenance personnel on the installation of seismic restraint system and routine maintenance of the system.

PART 2 PRODUCTS

2.01 PIPE HANGERS AND SUPPORTS

- A. Combination clevis hanger, pipe insulation shield and vapor barrier jacketed high density insulating saddle with companion high density filler piece.
1. Insulating saddles and filler pieces shall be of the same thickness and materials as the adjoining pipe insulation. Saddles shall cover the lower 180 degrees of the pipe or tubing, and companion filler pieces shall cover the upper 180 degrees of the pipe or tubing. Physical sizes, gages, etc. of the components of insulated hangers shall be in accordance with the following schedule:

PIPE OR TUBING SIZE (Inches)	SHIELD LENGTH (Inches)	SHIELD GAGE	SADDLE LENGTH (Inches)	VAPOR BARRIER JACKET LENGTH (Inches)
Up to 2-1/2	4	16	6	10
3 to 6	4	14	6	10
8 to 14	10	12	12	16
16 and up	10	10	12	16

- B. Pipe Insulation Shields: Fabricated of steel, with a minimum arc of 180 degrees, unless otherwise indicated. Shields for use with hangers and supports, with the exception of combination clevis type hangers, shall be in accordance with the following schedule:

PIPE OR TUBING SIZE (Inches)	SHIELD LENGTH (Inches)	SHIELD GAGE
Up to 2-1/2	8	18

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3 to 8	10	16
10 to 14	12	12
16 and up	18	10

- C. Pipe Covering Protection Saddles: 3/16 inch thick steel, of sufficient depth for the insulation thickness specified, notched so that saddle contact with the pipe is approximately 50 percent of the total axial cross section. Saddles for pipe 12 inches in size and larger shall have a center support.
- D. Pipe Hangers: Height adjustable standard duty clevis type, with cross bolt and nut.
1. Pipe spreaders or spacers shall be used on cross bolts of clevis hangers, when supporting piping 10 inches in size and larger.
 2. Swivel ring type hangers will be allowed for sprinkler piping up to a maximum of 2 inches in size.
- E. Adjustable Floor Rests and Base Flanges: Steel.
- F. Hanger Rods: Mild, low carbon steel, fully threaded or threaded at each end, with two nuts at each end for positioning rod and hanger, and locking each in place.
- G. Riser Clamps: Malleable iron or steel.
- H. Rollers: Cast Iron.

2.02 ANCHORS AND ATTACHMENTS

- A. Sleeve Anchors (Group II, Type 3, Class 3): Molly's Div./USM Corp. Parasleeve Series, Ramset's Dynabolt Series, or Red Head/Phillips AN, HN, or FS Series.
- B. Wedge Anchors (Zinc Plated, Group II, Type 4, Class 1): Hilti's Kwik Bolt Series, Molly's Div./USM Corp. Parabolt PB Series, Ramset's Trubolt T Series, or Red Head/Phillips WS Series.
- C. Self-Drilling Anchors (Group III, Type 1): Ramset's RD Series, or Red Head/Phillips S Series.

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- D. Non-Drilling Anchors (Group VIII, Type 1):
Ramset's Dynaset DS Series, Hilti's HDI Series,
or Red Head/Phillips J Series.
- E. Stud Anchors (Group VIII, Type 2): Red
Head/Phillips JS Series.
- F. Beam Clamps: Forged steel beam clamp, with
weldless eye nut (right hand thread), steel tie
rod, nuts, and washers, Grinnell's Fig No. 292
(size for load, beam flange width, and rod size
required).
- G. Metal Deck Ceiling Bolts: B-Line Systems' Fig.
B3019.
- H. Continuous Slotted Type Concrete Insert,
Galvanized:
 - 1. Load Rating 800 lbs/ft: Kindorf's D-986.
 - 2. Load Rating 1500 lbs/ft: Kindorf's D-980.
 - 3. Load Rating 3000 lbs/ft: Hohmann &
Barnard's Inc. Type CS-H.
 - 4. Load Rating 4500 lbs/ft: Hohmann &
Barnard's Inc. Type CS-HD.
- I. Threaded Type Concrete Insert: Galvanized
ferrous castings, internally threaded to receive
3/4 inch diameter machine bolts.
- J. Wedge Type Concrete Insert: Galvanized box-type
ferrous castings, designed to accept 3/4 inch
diameter bolts having special wedge shaped heads.

2.03 SEISMIC RESTRAINT SYSTEM FOR PIPING

- A. General:
 - 1. Coordinate all structural attachments with
the Commissioner.
 - 2. Design analysis shall include calculated
dead loads, static seismic loads, and
capacity of materials utilized for the
connection of the equipment or system to the
structure.
 - 3. Analysis shall detail anchoring methods,
bolt diameter, and embedment depth.
 - 4. Design seismic restraint devices to accept
without failure the forces calculated per
the applicable building code and as
specified.
 - 5. Friction from gravity loads shall not be
considered resistance to seismic forces.
 - 6. Fire protection systems shall meet the
requirements of NFPA-13 and NFPA-14 for the
building seismic requirements.
 - 7. Construct seismic supports constructed so
that support engagement is maintained.

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8. Stamp seismic supports with manufacturer's name and part number for identification.
 9. Design seismic supports specifically for mitigation of seismic force loads.
 10. Design the stiffness of seismic restraints for mechanical equipment so that the load path for the restraint performs its intended function.
 11. Where possible, utilize components designed with tamper resistant break-off bolt heads or break-off nuts to assure visual verification of proper installation.
 12. Attachment components shall be UL Listed catalog components with published loads designed specifically for seismic application.
- B. Type: Pre-engineered seismic restraint system designed to support and restrain piping to meet applicable lateral force requirements.
- C. Acceptable Manufacturers:
1. B-Line.
 2. Mason Industries.
 3. TOLCO Inc.
- D. Strut/Channel Bracing: 12 gauge solid steel with no holes, 1-5/8 inches wide x 1-5/8 inches deep of single lengths or stitch-welded back-to-back configurations.
- E. Pipe Bracing: Schedule 40 steel pipe.
- F. Cable Bracing: Pre-stretched galvanized aircraft cable 7 x 19 strand core.
- G. Rigid Seismic Braces For Single Hung Pipe Systems: A12 strut channel or schedule 40 steel pipe.
1. Maximum Brace Length: 13 feet 1 inches.
- H. Rigid Seismic Braces For Trapeze Supported Pipe Systems: A12 strut channel or schedule 40 steel pipe.
1. Maximum Brace Length: 13 feet 1 inches.
- I. Cable Seismic Braces For Single Hung Pipe Systems: Pre-stretched aircraft cable 7 x 19 core.

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- J. Cable Seismic Braces For Trapeze Supported Pipe Systems: Pre-stretched aircraft cable 7 x 19 core.
- K. Structural Attachments for Rigid and Cable Seismic Braces For Single Hung and Trapeze Supported Pipe Systems:
 - 1. Structural attachments shall be positive.
 - 2. Do not make structural attachments to the bottom of a bar joist.
 - 3. Supplemental steel shall be installed for all pre-cast decks less than 4 inches thick
 - 4. Do not use concrete inserts or continuous concrete insert strut to attach brace.
 - 5. Wedge type anchors are permitted. The size and embedment depth shall be determined by the supplier of the seismic restraint system and as approved.
- L. Vertical Brace Component (up-thrust protection)
 - 1. Reinforce Vertical Hanger Rod when lengths exceed the following:
 - a. 3/8 inch dia rod: 19 inches.
 - b. 1/2 inch dia rod: 25 inches.
 - c. 5/8 inch dia rod: 31 inches.
 - d. 7/8 inch dia rod: 43 inches.
 - e. 1 inch dia rod: 50 inches.
 - f. 1-1/4 inch dia rod: 62 inches.

2.04 FASTENERS

- A. Bolts, Nuts, Washers, Lags, and Screws: Medium carbon steel; size and type to suit application; galvanized for high humidity locations, and treated wood; plain finish for other interior locations. Except where shown otherwise on the Drawings, furnish type, size, and grade required for proper installation of the Work.

2.05 SHOP PAINTING AND PLATING

- A. Hangers, supports, rods, inserts and accessories used for pipe supports, unless chromium plated, cadmium plated or galvanized shall be shop coated with metal primer paint. Electroplated copper hanger rods, hangers and accessories may be used with copper pipe or copper tubing.
- B. Hanger supports for chromium plated pipe shall be chromium plated brass.

PART 3 EXECUTION

3.01 PREPARATORY WORK

- A. Place inserts into construction form work expeditiously, so as not to delay the Work.

3.02 INSTALLATION

- A. Do not hang or support one pipe from another or from ductwork.
 1. Do not bend threaded rod.
- B. Support all insulated horizontal piping conveying fluids below ambient temperature, by means of hangers or supports with insulation shields installed outside of the insulation.
- C. Space hangers or supports for horizontal piping on maximum center distances as listed in the following hanger schedules, except as otherwise specified, or noted on the Drawings.
 1. For Steel, and Threaded Brass Pipe:

PIPE SIZE (Inches)	MAXIMUM SPACING (Feet)
1 and under	8
1-1/4 and 1-1/2	9
2	10
2-1/2 and up	12

2. For Grooved End Steel Pipe:

PIPE SIZE (Inches)	MAXIMUM SPACING (Feet)
1-1/2 and under	7
2 through 4	10
5 and over	12

No pipe length shall be left unsupported between any two coupling joints.

3. For Copper Pipe and Copper Tubing:

PIPE OR TUBING SIZE (Inches)	MAXIMUM SPACING (Feet)
1-1/2 and under	6
2 and over	10

4. Cast Iron Soil Pipe:
 a. General:

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- 1) Where piping is suspended on centers in excess of 18 inches by means of non-rigid hangers, provide sway bracing to prevent horizontal pipe movement.
- 2) Additionally, brace piping 5 inches and larger to prevent horizontal movement and/or joint separation. Provide braces, blocks, rodding or other suitable method at each branch opening, or change of direction
- b. For Bell & Spigot Cast Iron Soil Pipe: Space hangers or support pipe at each joint or on maximum centers of 5 feet. Place hangers or supports as close as possible to joints and when hangers or supports do not come within 1 foot of a branch line fitting, install an additional hanger or support at the fitting.
- c. For Hubless Cast Iron Soil Pipe: Space hangers or support pipe at each joint or on maximum centers of 5 feet. Place hanger or supports as close as possible to joints and when hangers or supports do not come within 1 foot of a branch line fitting, install an additional hanger or support at the fitting.
8. For Directional Changes: Install a hanger or support close to the point of change of direction of all pipe runs in either a horizontal or vertical plane.
9. For Concentrated Loads: Install additional hangers or supports, spaced as required and directed, at locations where concentrated loads such as in-line pumps, valves, fittings or accessories occur, to support the concentrated loads.
10. For Branch Piping Runs and Runouts Over 5 feet In Length: Install a minimum of one hanger, and additional hangers if required by the hanger spacing schedules.
11. Parallel Piping Runs: Where several pipe lines run parallel in the same plane and in close proximity to each other, trapeze hangers may be submitted for approval. Base hanger spacing for trapeze type hangers on the smallest size of pipe being supported. Design the entire hanger assembly based on a

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- safety factor of five, for the ultimate strength of the material being used.
12. Support floor drain traps from the overhead construction, with hangers of type and design as required and approved. Overhead supports are not required for floor drain traps installed directly below earth supported concrete floors.

D. Size hanger rods in accordance with the following:

PIPE OR TUBING SIZE (Inches)	SINGLE ROD HANGER SIZE (Inches)		DOUBLE ROD HANGER SIZE (Inches)	
	PIPE	TUBING	PIPE	TUBING
1/2 to 2	3/8	1/4	3/8	1/4
2-1/2 and 3	1/2	3/8	3/8	1/4
4 and 5	5/8	1/2	1/2	3/8
6	3/4	1/2	5/8	1/2
8, 10 and 12	7/8	5/8	3/4	5/8

1. Size hanger rods, for piping over 12 inches in size and multiple line supports, based on a safety factor of five for the ultimate strength of the materials being used.
2. Secure hanger rods as follows: Install one nut under clevis, angle or steel member; one nut on top of clevis, angle or steel member; one nut inside insert or on top of upper hanger attachment and one nut and washer against insert or on lower side of upper hanger attachment. A total of four nuts are required for each rod, two at upper hanger attachment and two at hanger.

E. Vertical Piping:

1. Support vertical risers of piping systems, by means of heavy duty hangers installed close to base of pipe risers, and by riser clamps with extension arms at intermediate floors, with the distance between clamps not to exceed 25 feet, unless otherwise specified. Support pipe risers in vertical shafts equivalent to the aforementioned. Install riser clamps above floor slabs, with the extension arms resting on floor slabs. Provide adequate clearances for risers that

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- are subject to appreciable expansion and contraction, caused by operating temperature ranges.
2. Support extension arms of riser clamps, secured to risers to be insulated for cold service, 4 inches above floor slabs, to allow room for insulating and vapor sealing around riser clamps.
 3. Install intermediate supports between riser clamps on maximum 6 foot centers, for copper tubing risers 1-1/4" in size and smaller, installed in finished rooms or spaces other than mechanical equipment machine or steam service rooms, or penthouse mechanical equipment rooms.
 4. Support cast iron risers, by means of heavy duty hangers installed close to the base of the pipe risers, and 1/4 inch thick malleable iron or steel riser clamps with extension arms at each floor level, with the distance between clamps not to exceed 25 feet. Support cast iron risers in vertical shafts equivalent to the aforementioned.
 5. Support hubless cast iron risers, by means of heavy duty hangers installed close to the base of the pipe risers, and by malleable iron or steel riser clamps with the extension arms at each floor level, with the distance between clamps or intermediate supports not to exceed 12 feet. Support risers in vertical shafts equivalent to the aforementioned.
- F. Floor Supports: Install adjustable yoke rests with base flanges, for the support of piping, unless otherwise indicated on the Drawings. Install supports in a manner, which will not be detrimental to the building structure.
- G. Underground Cast Iron Pipe Supports: Firmly bed pipe laid underground, on solid ground along bottom of pipe. Install masonry piers for pipe laid in disturbed or excavated soil or where suitable bearing cannot be obtained. Support pipe, laid proximate to building walls in disturbed or excavated soil, or where suitable bearing cannot be obtained, by means of wall brackets or hold-fasts secured to walls in an approved manner.

3.03 UPPER HANGER ATTACHMENTS

Pipe Hangers
And Supports

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- A. General:
1. Secure upper hanger attachments to overhead structural steel, steel bar joists, or other suitable structural members.
 2. Do not attach hangers to steel decks that are not to receive concrete fill.
 3. Do not attach hangers to precast concrete plank decks less than 2-3/4 inches thick.
 4. Do not use flat bars or bent rods as upper hanger attachments.
- B. Attachment to Steel Frame Construction: Provide intermediate structural steel members where required by pipe support spacing. Select steel members for use as intermediate supports based on a minimum safety factor of five.
1. Do not use drive-on beam clamps.
 2. Do not support piping over 4 inches in size from steel bar joists. Secure upper hanger attachments to steel bar joists at panel points of joists.
 3. Do not drill holes in main structural steel members.
 4. Beam clamps, with tie rods as specified, may be used as upper hanger attachments for the support of piping, subject to clamp manufacturer's recommended limits.
- C. Attachment to Concrete Filled Steel Decks:
1. New Construction: Install metal deck ceiling bolts.
 2. Existing Construction: Install welding studs (except at roof decks). Do not support a load in excess of 250 lbs from any single welded stud.
 3. Do not attach hangers to decks less than 2-1/2 inches thick.
- D. Attachment to Cast-In-Place Concrete: Secure to overhead construction by means of cast-in-place concrete inserts.
- E. Attachment to Existing Cast-In-Place Concrete:
1. For piping up to a maximum of 4 inches in size, secure hangers to overhead construction with self-drilling type expansion shields and machine bolts.
 2. Secure hangers to wall or floor construction with single unit expansion shields or self-

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drilling type expansion shields and machine bolts.

3.04 ANCHORS, RESTRAINTS, RIGID SUPPORTS, STAYS AND SWAY BRACES

- A. Install pipe anchors, restraints and sway braces, at locations noted on the Drawings. Design anchors so as to permit piping to expand and contract freely in opposite directions, away from anchor points. Install anchors independent of all hangers and supports, and in a manner that will not affect the structural integrity of the building.
- B. Cast Iron Soil Piping Systems:
1. Where piping is suspended on centers in excess of 18 inches by means of non-rigid hangers, provide sway braces, of design, number and location in accordance with the Cast Iron Soil Pipe Institute's Cast Iron Soil Pipe and Fittings Handbook to prevent horizontal pipe movement.
 2. Additionally, brace piping 5 inches and larger to prevent horizontal movement and/or joint separation. Provide braces, blocks, rodding or other suitable method at each branch opening, or change of direction in accordance with the Cast Iron Soil Pipe Institute's Cast Iron Soil Pipe and Fittings Handbook to prevent horizontal pipe movement.

3.05 COMBINATION CLEVIS HANGER, PIPE INSULATION SHIELD AND VAPOR BARRIER JACKETED HIGH DENSITY INSULATING SADDLES

- A. Install a combination clevis hanger, pipe insulation shield and vapor barrier jacketed high density insulating saddles, at all points of support for piping or tubing to be insulated for cold service. Furnish companion high density vapor barrier jacketed saddle pieces, of the same material, thickness and length, for installation over the top 180 degree surface of pipe or tubing, at each point of support where an insulated clevis hanger is utilized.

3.06 PIPE INSULATION SHIELDS

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- A. Unless otherwise specified, install a pipe insulation shield, at all points of support. Center shields on all hangers and supports outside of high density insulation insert, and install in such a manner so as not to cut, or puncture jacket.

3.07 PIPE COVERING PROTECTION SADDLES

- A. Install pipe covering protection saddles at all points of support, for steel piping 6 inches in size and larger, insulated with hot service insulation. Weld saddles to piping to insure movement with pipe.

3.08 SEISMIC RESTRAINT SYSTEMS

- A. General:
1. Install seismic restraints in accordance with seismic restraint manufacturer's printed installation instructions and guidelines unless otherwise specified.
 2. Do not use powder-actuated fasteners for seismic restraint anchorage in tension applications.
 3. Laterally support vertical risers with riser clamps at each floor unless otherwise specified.
 4. When systems cross building seismic separation points, pass between buildings, or are supported from different portions of the building, install to allow differential support displacements without damaging the pipe, equipment or support connections. Install pipe loops, anchors, offsets, and guides as required to provide specified capability of motion and limit movement of adjacent piping.
 5. Do not brace seismic bracing to different parts of the building that may respond differently during seismic activity.
 6. Provide adequately sized openings in walls, floors, and ceilings for anticipated seismic movement. Provide fire stopping in fire-rated walls.
 7. Seismic restraint installations shall not cause any modifications in the positioning of equipment or piping resulting in stresses or misalignment.
 8. No rigid connections between equipment, piping, duct, or conduit shall be made to

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the building structure that degrades the noise and vibration-isolation system specified.

9. Bracing attached to structural members may present additional stresses. Submit loads to the Commissioner.
 10. Provide vertical stiffening components to support rods when necessary to accept compressive loads. Welding of components to vertical support rods is not acceptable.
 11. Clevis supported pipe must have cross-bolt support at each seismic bracing location.
 12. Notify Commissioner if any discrepancies between the specifications and field conditions prior to installation.
- B. Seismic Restraints for Piping:
1. Trapeze assemblies supporting pipes shall be braced considering the total weight of the pipes on the trapeze.
 2. Provide transverse bracing at 40 ft. maximum spacing for welded steel pipe, brazed copper pipe or grooved piping with UL 213 listed connections.
 - a. Traverse bracing for threaded steel or copper pipe or non-listed UL grooved connections shall not exceed 20 ft. maximum.
 3. Provide longitudinal bracing at 80 ft. maximum spacing for welded steel pipe, brazed copper pipe or grooved piping with UL 213 listed connections.
 - a. Traverse bracing for threaded steel or copper pipe or non-listed UL grooved connections shall not exceed 40 ft. maximum.
 4. Transverse piping restraints for one pipe section may also act as a longitudinal restraint for a pipe section of the same size connected perpendicular to it if the restraint is installed within 24-inches of the elbow centerline or tee or combined stresses are within allowable limits at longer distances.
 5. Branch line piping shall not be used to brace main piping.
 - a. No larger diameter pipe shall be braced by a smaller diameter pipe.
 6. Attach all longitudinal seismic braces directly to piping.

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- a. Encapsulate clamp and brace with insulation equal to that on the pipe.
7. Use hold down clamps to attach pipe to trapeze hangers before installing seismic restraints.
8. Brace vibration isolated piping with cables to allow flexibility.

END OF SECTION

SECTION 220553
PIPE AND VALVE IDENTIFICATION

PART 1 GENERAL

1.01 REFERENCES

- A. ANSI A13.1 - Scheme for Identification of Piping Systems.

1.02 SUBMITTALS

- A. Product Data: Catalog sheets, specifications and installation instructions for each item specified.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. W.H. Brady Co., Milwaukee, WI.
- B. Emed Co., Buffalo, NY.
- C. Panduit Corp., Tinley Park, IL.
- D. Seton Nameplate Corp., New Haven, CT.

2.02 PIPE MARKERS AND ACCESSORIES

- A. Snap-on Marker: One piece wrap around type constructed of precoiled acrylic plastic with clear polyester coating, integral flow arrows, legend printed in alternating directions, 3/4 inch adhesive strip on inside edge, and 360 degree visibility.
- B. Strap-On Marker: Strip type constructed of precoiled acrylic plastic with clear polyester coating, integral flow arrows, legend printed in alternating directions, factory applied grommets, and pair of stainless steel spring fasteners.
- C. Stick-On Marker: Pressure sensitive adhesive backed type constructed of vinyl with clear polyester coating, and integral flow arrows for applications where flow arrow banding tape is not being used.
- D. Pipe Marker Legend and Color Field Sizes:

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OUTSIDE DIAMETER OF PIPE OR INSULATION (Inches)	LETTER SIZE (Inches)	LENGTH OF COLOR FIELD (Inches)
3/4 to 1-1/4	1/2	8
1-1/2 to 2	3/4	8
2-1/2 to 6	1-1/4	12
8 to 10	2-1/2	24
Over 10	3-1/2	32

- E. Banding Tapes: Pressure sensitive adhesive backed type constructed of vinyl with clear polyester coating.
1. Plain Tape: Unprinted type; color to match pipe marker background.
 2. Flow Arrow Tape: Printed type with integral flow arrows; color to match pipe marker background.
- F. Pipe Size Labels: Pressure sensitive adhesive backed type constructed of vinyl with clear polyester coating, vertical reading pipe size in inches, and legend size matching adjacent pipe marker.

2.03 PIPE SERVICE IDENTIFICATION TAGS

- A. Type: No. 19 B & S gage brass, with 1/4 inch high pipe service abbreviated legend on one line, over 1/2 inch high pipe size legend in inches, both deep stamped and black filled; and 3/16 inch top hole for fastener.
- B. Size: 2 inch square tag.
- C. Fasteners: Brass "S" hook or brass jack chain of size as required for pipe to which tag is attached.

2.04 VALVE SERVICE IDENTIFICATION TAGS

- A. Type: No. 19 B & S gage brass, with 1/4 inch high valve service abbreviated lettering on one line over 1/2 inch high valve service chart number, both deep stamped and black filled; and with 3/16 inch top hole for fastener.
- B. Sizes:
1. Plumbing Use: 1-1/2 inch hexagon.

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- C. Fasteners: Brass "S" hook or brass jack chain of size as required for valve stem or handle to which tag is attached.

2.05 VALVE SERVICE IDENTIFICATION CHART FRAMES

- A. Type: Satin finished extruded aluminum frame with rigid clear plastic glazing, size to fit 8-1/2 x 11 inches valve chart.

PART 3 EXECUTION

3.01 PREPARATION

- A. Complete testing, insulation and finish painting work prior to completing the Work of this Section.
- B. Clean pipe surfaces with cleaning solvents prior to installing piping identification.
- C. Remove dust from insulation surfaces with clean cloths prior to installing piping identification.

3.02 INSTALLATION

- A. Install the Work of this Section in accordance with the manufacturer's printed installation instructions, unless otherwise specified.
- B. Stick-On Pipe Markers:
 - 1. Install minimum of 2 markers at each specified location, 90 degrees apart on visible side of pipe.
 - 2. Encircle ends of pipe markers around pipe or insulation with banding tape with one inch lap. Use plain banding tape on markers with integral flow arrows, and flow arrow banding tape on markers without integral flow arrows.
- C. Pipe Size Labels: Install labels adjacent to each pipe marker and upstream from flow arrow. Install a minimum of 2 pipe size labels at each specified location, 90 degrees apart on visible side of pipe.
- D. Pipe Service Identification Tags: Attach tags to piping being identified with "S" hooks or jack chains.

3.03 PIPING IDENTIFICATION SCHEDULE

- A. Piping Identification Types:

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1. Piping or Insulation under 3/4 inch od: Pipe identification tags.
 2. Piping or Insulation 3/4 inch to 5-7/8 inch od: Snap-on marker or stick-on marker.
 3. Piping or Insulation 6 inch od and Larger: Strap-on marker or stick-on marker.
- B. Identify exposed piping, bare or insulated, as to content, size of pipe and direction of flow, with the following exceptions:
1. Piping in non-walk-in tunnels or underground conduits between manholes.
 2. Piping in furred spaces or suspended ceilings, except at valve access panels where valves and piping shall be identified as specified for exposed piping systems.
 3. Piping in finished spaces such as offices, class rooms, wards, toilet rooms, shower rooms and spaces as specified.
- C. Locate piping identification to be visible from exposed points of observation.
1. Locate piping identification at valve locations; at points where piping enters and leaves a partition, wall, floor or ceiling, and at intervals of 20 feet on straight runs.
 2. Where 2 or more pipes run in parallel, place printed legend and other markers in same relative location.

3.04 VALVE IDENTIFICATION SCHEDULE

- A. Valve Service Identification Tags:
1. Tag control valves, except valves at equipment, with a brass tag fastened to the valve handle or stem, marked to indicate service and numbered in sequence for the following applications:
 - a. Domestic water valves controlling mains, risers and branch runouts.
 - b. Gas valves controlling mains, risers, and branch runouts.
 - c. Valves in sprinkler and fire standpipe systems, except hose valves.
- B. Valve Service Identification Charts:
1. Provide 2 framed valve charts for each piping system specified to be provided with valve identification tags. Type charts on 8-1/2 x 11 inches heavy white bond paper, indicating valve number, service and location.
 2. Hang framed charts at locations as directed.

END OF SECTION

SECTION 220576
DRAINAGE ACCESSORIES

PART 1 GENERAL

1.01 REFERENCES

- A. Comply with the applicable requirements of ASME A112.36.2M - Cleanouts, and ASME A112.1.2 - Drainage Funnels and Air Gaps.

1.02 SUBMITTALS

- A. Product Data: Catalog sheets, specifications, and installation instructions for each item specified except fasteners.

1.03 MAINTENANCE

- A. Special Tools: Deliver the following to the Commissioner:
1. Tools for Vandal Resistant Fasteners: One for each type and size.
 2. T-Handle Wrench for Cleanout Plugs: One for each type and size.

PART 2 PRODUCTS

2.01 CLEANOUT PLUG

- A. Cast brass or bronze, with threaded end, and raised or countersunk head.
1. Tapped head for attachment of cleanout wall or deck plate covers where required.
- B. Anti-Seize Lubricant: Never-Seez by Bostik Chemical Group, Broadview, IL; Molycote 1000 by Dow Corning Corp, Midland, MI; Anti-Seize Lubricant by Loctite Corp, Newington, CT.

2.02 CLEANOUT

- A. Threaded pipe fitting or cast iron ferrule with gas tight cleanout plug.

2.03 CLEANOUT WALL PLATE

- A. Round, stainless steel or polished chrome plated bronze cover plate with stainless steel vandal resistant fastener to secure to cleanout plug.

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2.04 CLEANOUT DECK PLATE

- A. Standard duty floor cleanout fitting with coated cast iron body; round, polished nickel bronze scoriated top secured to cleanout plug with stainless steel vandal resistant fastener; threaded height adjustment, cast iron head, gas tight cleanout plug, and connection to match piping option selected.
- B. Membrane flange and clamping collar, secured with corrosion resistant fasteners.

2.05 CONDUCTOR EXPANSION JOINT

- A. Coated cast iron body with brass telescoping sleeve, adjustable packing gland with graphite, neoprene or mineral fiber gasket, and connection to match piping option selected.

2.06 AIR GAP FITTING

- A. Coated cast iron body with air gaps, set screw or threaded inlet, and outlet connection to match piping option selected.

2.07 FASTENERS

- A. Corrosion Resistant Fasteners: Brass, bronze, or Type 302 or 304 stainless steel bolts.
- B. Vandal Resistant Fasteners: Torx head with center pin.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install the Work of this section in accordance with the manufacturer's printed installation instructions, unless otherwise specified.
- B. Cleanout Plug: Lubricate threads with anti-seize lubricant before final installation.
- C. Secure external components in place with vandal resistant fasteners or devices which cannot be removed without special tools.

END OF SECTION

SECTION 220577
FLOOR AND AREA DRAINS

PART 1 GENERAL

1.01 REFERENCES

- A. Unless otherwise specified, the Work of this section shall meet the applicable requirements of FS WW-P-541 - Plumbing Fixtures, and ASME A112.21.1M - Floor Drains.

1.02 SUBMITTALS

- A. Product Data: Catalog sheets, specifications and installation instructions for each type drain specified.

1.03 MAINTENANCE

- A. Special Tools: Deliver to the Commissioner.
1. Tools for Vandal Resistant Fasteners: One for each type and size.

PART 2 PRODUCTS

2.01 FLOOR DRAIN

- A. Drain Body: Coated cast iron, two-piece body with reversible flashing clamp, minimum 9 inch dia drainage flange, corrosion resistant bolts, weep holes, bottom outlet, and connection to match piping option selected.
- B. Strainer Head: Round, minimum 7 inch dia, nickel bronze with threaded shank for height adjustment.
- C. Strainer Grate: Polished nickel bronze, heel proof; secured with stainless steel vandal resistant fasteners.
- D. Acceptable Drain Series: Josam 30000A, Smith 2010A, Wade W1100, and Zurn Z415.

2.02 AREA DRAIN (A.D.)

- A. Drain Body: Round, coated cast iron, two-piece body with flashing clamp, 12 inch x 9 inch drainage flange, corrosion resistant bolts, weep holes, bottom outlet, and connection to match piping option selected.

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- B. Strainer Head: 9 inch x 6 inch, coated cast iron.
- C. Strainer Grate: Nickel Bronze, heel proof, hinged grate secured with stainless steel vandal resistant fasteners.
- D. Acceptable Drain Series: Josam, Smith 2280, Wade, and Zurn.

2.03 TRENCH DRAIN (T.D.)

- A. Trench drain shall be galvanized cast iron body and flange, bottom outlet caulk connection with dome strainer with end plates and gasket. Grates to be installed with vandal proof screws. Length of drain shall be as shown on Drawings. Drain shall be Smith Fig. 2885-F-G-C-U-DBS, Josam 76000-20-30-40-X, Zurn 2664-C-G-VP, MIFAB T1320-FL-6-C-13, Wade 2950-26-39 or Watts Drainage Products TD940-FC-6-21.

2.04 FASTENERS

- A. Corrosion Resistant Fasteners: Brass, bronze, or Type 302 or 304 or stainless steel bolts.
- B. Vandal Resistant Fasteners: Torx head with center pin.

2.05 FREE AREA OF GRATE

- A. Minimum strainer grate free area listed below for each connecting pipe size:

CONNECTING PIPE SIZE (Inches Nominal)	INTERIOR DRAINS FREE AREA (Square Inches)	EXTERIOR DRAINS FREE AREA (Square Inches)
1-1/2	3.06	4.08
2	4.71	6.28
3	10.59	14.12
4	18.90	25.20
5	29.40	39.20
6	42.45	56.60
8	75.38	100.50

PART 3 EXECUTION

3.01 INSTALLATION

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- A. Install the Work of this section in accordance with the manufacturer's printed installation instructions, unless otherwise specified.
- B. Protect weep holes from plugging during installation. Rod out weep holes after installation to remove obstructions.
- C. Set drainage flange flush with top of structural floor slab, or at elevation otherwise indicated.
- D. After membrane waterproofing installed and cured, secure clamping ring.
- E. Adjust strainer head to height indicated. If height not indicated, set at 1/2 inch below finished floor elevation.
- F. Secure external components in place with vandal resistant fasteners or devices which cannot be removed without special tools.

END OF SECTION

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SECTION 220700
PIPING INSULATION

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Through Penetration Firestops: Section 078400.
- B. Painting: Section 099000
- C. Pipe Hangers and Supports: Section 220529.

1.02 ABBREVIATIONS

- A. FS: Federal Specification.
- B. K: Thermal Conductivity, i.e., maximum Btu per inch thickness per hour per square foot.
- C. pcf: Pounds per cubic foot.
- D. PVC: Polyvinylchloride.

1.03 SUBMITTALS

- A. Product Data: Manufacturer's catalog sheets, specifications and installation instructions for the following:
 - 1. Insulation Materials.
 - 2. Jacket Materials.
- B. Quality Control Submittals:
 - 1. Installers Qualification Data:
 - a. Name of each person who will be performing the Work, and their employer's name, business address and telephone number.
 - b. Furnish names and addresses of the required number of similar projects that each person has worked on which meet the qualifications.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Insulation installed inside buildings, including laminated jackets, mastics, sealants and adhesives shall have a Fire Spread/Smoke Developed Rating of 25/50 or less based on ASTM E 84.

PART 2 PRODUCTS

2.01 PIPING INSULATION

- A. Fibrous Glass (Mineral Fiber) Insulation:
Composed principally of fibers manufactured from rock, slag, or glass, with or without binders, and asbestos free.
1. Preformed Pipe Insulation: Minimum density 3 pcf; ASTM C 547:
 - a. Class 1 (Suitable for Temperatures Up to 450 degrees F): K of 0.26 at 75 degrees F.
 2. Premolded Fitting Insulation: Minimum density 4.0 pcf, K of 0.26 at 75 degrees F; ASTM C 547, Class 1.
 3. Insulation Inserts for PVC Fitting Jackets: Minimum density 1.5 pcf, K of 0.28 at 75 degrees F; ASTM C 553, Type III.
 - a. Suitable for temperatures up to 450 degrees F.
- B. High Density Jacketed Insulation Inserts for Hangers and Supports:
1. For Use with Fibrous Glass Insulation:
 - a. Cold Service Piping:
 - 1) Polyurethane Foam: Minimum density 4 pcf, K of 0.13 at 75 degrees F, minimum compressive strength of 125 psi.
 - b. Hot Service Piping:
 - 1) Calcium Silicate: Minimum density 15 pcf, K of 0.50 at 300 degrees F; ASTM C 533.
 - 2) Perlite: Minimum density 12 pcf, K of 0.60 at 300 degrees F; ASTM C 610.
 2. For Use with Flexible Elastomeric Foam Insulation: Hardwood dowels and blocks, length or thickness equal to insulation thickness, other dimensions as specified or required.
- D. Cements:
1. Fibrous Glass Thermal Insulating Cement: Asbestos free; ASTM C 195.
 2. Fibrous Glass Hydraulic Setting Thermal Insulating and Finishing Cement: ASTM C 449/C 449M.

2.02 INSULATION JACKETS

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- A. Laminated Vapor Barrier Jackets for Piping:
Factory applied by insulation manufacturer,
conforming to ASTM C 1136, Type I.
 - 1. Type I: Reinforced white kraft and aluminum foil laminate with kraft facing out.
 - a. Pipe Jackets: Furnished with integral 1-1/2 inch self sealing longitudinal lap, and separate 3 inch wide adhesive backed butt strips.
 - 2. Laminated vapor barrier jackets are not required for flexible elastomeric foam insulation.

- B. Premolded PVC Fitting Jackets:
 - 1. Constructed of high impact, UV resistant PVC.
 - a. ASTM D 1784, Class 14253-C.
 - b. Working Temperature: 0-150 degrees F.

- C. Metal Jacketing:
 - 1. Aluminum: ASTM B 209, Alloys 1100, 30003, 3105 or 5005, Temper H14, 0.016 inch thick.
 - a. Factory Pre-formed Sectional Pipe Jacketing:
 - 1) Smooth outer finish with integral bonded laminated polyethylene film - kraft paper moisture barrier underside.
 - 2) Pittsburgh or modified Pittsburgh longitudinal lock seams.
 - 3) 2 inch overlapping circumferential joints with integral locking clips, or butt joints sealed with 2 inch wide mastic backed aluminum snap bands.
 - b. Fastening Devices:
 - 1) Strapping: Type 18-8 stainless steel, 0.020 inch thick, 1/2 and 3/4 inch wide as specified.
 - 2) Wing Seals: Type 18-8 stainless steel, 0.032 inch thick.
 - 3) Sheet Metal Screws: Panhead, Type A, hardened aluminum, and stainless steel.
 - 2. Circumferentially Corrugated Aluminum Jacketing: Childer's Corrolon.
 - a. Construction: 3/16 inch circumferentially corrugated embossed aluminum, ASTM B 209, Types 1100, 3003, 3105, or 505, H-14 temper, 0.016 inch thick.

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- b. Moisture Barrier: Integrally bonded to jacket over entire surface in contact with insulation.
- c. Fastening Devices:
 - 1) Strapping: 0.020 inch thick by 1/2 inch wide, Type 3003, 3105, 5005, H-14 temper.
 - 2) Wing Seals: 0.032 inch thick Type 5005, H-14 temper aluminum.

- E. Under Lavatory Piping Protection Cover: ADA compliant.
 - 1. Construction: 1/8 inch thick chemical, microbial, and fungal resistant, injection molded smooth PVC vinyl with internal ribs.
 - 2. Fasteners: Reusable, finger press internal fasteners presenting no sharp or abrasive external surfaces.
 - 3. Cover Trimming: Tear on internal, dimensioned tear lines for proper fit.
 - 4. Kit includes covering for 8 inch tailpiece-trap, 8 inch waste arm, hot and cold water supplies and valves, and required fasteners.
 - 5. Acceptable Covers:
 - a. Lav Guard 2, E-Z Series by IPS Corp., 202 Industrial Park Lane, Collierville, TN 38017, (800) 340-5969, www.truebro.com.
 - b. Pro-Extreme Series by Plumberex, P.O. Box 1684, Palm Springs, CA 92263, (800) 475-8629, www.plumberex.com.

2.03 ADHESIVES, MASTICS, AND SEALERS

- A. Lagging Adhesive (Canvas Jackets): Childers' CP-50A, Epolux's Cadalag 336, Foster's 30-36.
- B. Vapor Seal Adhesive (Fibrous Glass Insulation): Childers' CP-82, Epolux's Cadoprene 400, Foster's 85-75 or 85-20.
- C. Vapor Barrier Mastic/Joint Sealer (Fibrous Glass Insulation): Childers' CP-30, Epolux's Cadalar 670, Foster's 95-44 or 30-35.
- D. Adhesive (Flexible Elastomeric Foam): Armstrong's 520, Childers' CP-80, Epolux's Cadoprene 488, Foster's 82-40.
- E. Adhesive (Reinforcing Membrane): Childers' Chil-Spray WB CP-56.

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- F. Mastic (Reinforcing Membrane): Childers' AK-CRYL CP-9.
- G. Sealant (Metal Pipe Jacket): One-part silicone sealant for high temperatures; Dow Corning's Silastic 736 RTV or General Electric's RTV 106.

2.04 MISCELLANEOUS MATERIALS

- A. Pressure Sensitive Tape for Sealing Laminated Jackets:
 - 1. Acceptable Manufacturers: Alpha Associates, Childers, Ideal Tape, Morgan Adhesive.
 - 2. Type: Same construction as jacket.
- B. Wire, Bands, and Wire Mesh:
 - 1. Binding and Lacing Wire: Nickel copper alloy or copper clad steel, gage as specified.
 - 2. Bands: Galvanized steel, 1/2 inch wide x 0.015 inch thick, with 0.032 inch thick galvanized wing seals.
 - 3. Wire Mesh: Woven 20 gage steel wire with 1 inch hexagonal openings, galvanized after weaving.
- C. Reinforcing Membrane: Glass or Polyester, 10 x 10 mesh. Alpha Associates Style 59, Childer's Chil-Glas, Foster's MAST-A-FAB.

PART 3 EXECUTION

3.01 PREPARATION

- A. Perform the following before starting insulation Work:
 - 1. Install hangers, supports and appurtenances in their permanent locations.
 - 2. Complete testing of piping.
 - 3. Clean and dry surfaces to be insulated.

3.02 INSTALLATION, GENERAL

- A. Install the Work of this Section in accordance with the manufacturer's printed installation instructions unless otherwise specified.
- B. Provide continuous piping insulation and jacketing when passing thru interior wall, floor, and ceiling construction.
 - 1. At Through Penetration Firestops: Coordinate insulation densities with the requirements of

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approved firestop system being installed.
See Section 078400.

- a. Insulation densities required by approved firestop system may vary with the densities specified in this Section. When this occurs use the higher density insulation.

- C. Do not intermix different insulation materials on individual runs of piping.

3.03 INSTALLATION AT HANGERS AND SUPPORTS

- A. Reset and realign hangers and supports if they are displaced while installing insulation.
- B. Install high density jacketed insulation inserts at hangers and supports for insulated piping.
- C. Insulation Inserts For Use with Fibrous Glass Insulation:
 - 1. Where clevis hangers are used, install insulation shields and high density jacketed insulation inserts between shield and pipe.
 - a. Where insulation is subject to compression at points over 180 degrees apart, e.g. riser clamps, U-bolts, trapezes, etc.; fully encircle pipe with 2 protection shields and 2 high density jacketed fibrous glass insulation inserts within supporting members.
 - 1) Exception: Locations where pipe covering protection saddles are specified for hot service piping, 6 inch and larger.

3.04 INSTALLATION OF FIBROUS GLASS COLD SERVICE INSULATION

- A. Install insulation materials with a field or factory applied ASTM C 1136 Type I laminated vapor barrier jacket, unless otherwise specified.
- B. Piping:
 - 1. Butt insulation joints together, continuously seal minimum 1-1/2 inch wide self-sealing longitudinal jacket laps and 3-inch wide butt adhesive backed strips.
 - a. Substitution: 3 inch wide pressure sensitive sealing tape, of same material as jacket, may be used in lieu of butt strips.
 - 2. Bed insulation in a 2-inch wide band of vapor barrier mastic, and vapor seal exposed ends

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of insulation with vapor barrier mastic at each butt joint between pipe insulation and equipment, fittings or flanges at the following intervals:

- a. Horizontal Pipe Runs: 21 ft.
- b. Vertical Pipe Runs: 9 ft.

- C. Fittings, Valves, Flanges and Irregular Surfaces:
 - 1. Insulate with mitre cut or premolded fitting insulation of same material and thickness as pipe insulation.
 - 2. Secure insulation in place with 16-gage wire, with ends twisted and turned down into insulation.
 - 3. Butt insulation against pipe insulation and bond with joint sealer.
 - 4. Insulate valves up to and including bonnets, without interfering with packing nuts.
 - 5. Apply leveling coat of insulating cement to smooth out insulation and cover wiring.
 - 6. When insulating cement has dried, seal fitting, valve and flange insulation, by imbedding a layer of reinforcing membrane or 4 oz. canvas jacket between 2 flood coats of vapor barrier mastic, each 1/8 inch thick wet.
 - 7. Lap reinforcing membrane or canvas on itself and adjoining pipe insulation at least 2 inches.
 - 8. Trowel, brush or rubber glove outside coat over entire insulated surface.
 - 9. Exceptions:
 - a. Type C and D Piping Systems: Valves, fittings and flanges may be insulated with premolded PVC fitting jackets, with fibrous glass insulation inserts.
 - 1) Additional insulation inserts are required for services with operating temperatures under 45 degrees F or where insulation thickness exceeds 1-1/2 inches. The surface temperature of PVC fitting jacket must not go below 45 degrees F.

3.05 INSTALLATION OF FIBROUS GLASS HOT SERVICE INSULATION

- A. Install insulation materials with field or factory applied ASTM C 1136 Type I laminated vapor barrier jacket unless otherwise specified.
- B. Canvas Jackets on Piping, Fittings, Valves, Flanges, Unions, and Irregular Surfaces:

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1. For Piping 2 inch Size and Smaller: 4 oz per sq yd unless otherwise specified.
2. For Piping Over 2 inch Size: 6 oz per sq yd unless otherwise specified.

C. Piping:

1. Butt insulation joints together, continuously seal minimum 1-1/2 inch wide self-sealing longitudinal jacket laps and 3-inch wide adhesive backed butt strips.
 - a. Substitution: 3 inch wide pressure sensitive sealing tape, of same material as the jacket, may be used in lieu of butt strips.
2. Fill voids in insulation at hanger with insulating cement.
3. Exceptions:
 - a. Piping in Accessible Shafts, Attic Spaces, Crawl Spaces, Unfinished Spaces and Concealed Piping: Butt insulation joints together and secure minimum 1-1/2 inch wide longitudinal jacket laps and 3 inch wide butt strips of same material as jacket, with outward clinching staples on maximum 4 inch centers. Fill voids in insulation at hangers with insulating cement.

D. Fittings, Valves, Flanges and Irregular Surfaces:

1. Insulate with mitre cut or premolded fitting insulation of same material and thickness as insulation.
2. Secure in place with 16-gage wire, with ends twisted and turned down into insulation.
3. Butt fitting, valve and flange insulation against pipe insulation, and fill voids with insulating cement.
4. Insulate valves up to and including bonnets, without interfering with packing nuts.
5. Apply leveling coat of insulating cement to smooth out insulation and cover wiring.
6. After insulating cement has dried, coat insulated surface with lagging adhesive, and apply 4 oz or 6 oz canvas jacket as required by pipe size.
 - a. Lap canvas jacket on itself and adjoining pipe insulation at least 2 inches.
 - b. Size entire canvas jacket with lagging adhesive.
7. Exceptions:
 - a. In Types E, and F Service Piping Systems: Valves, fittings and flanges

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may be insulated with premolded PVC fitting jackets, with fibrous glass insulation inserts.

- 1) Additional insulation inserts are required for services with operating temperatures over 250 degrees F or where insulation thickness exceeds 1-1/2 inches. The surface temperature of PVC fitting jacket must not exceed 150 degrees F.
- b. In Types E, and F Service Piping Systems: Insulate fittings, valves, and irregular surfaces 3 inch size and smaller with insulating cement covered with 4 oz or 6 oz canvas jacket as required by pipe size.
 - 1) Terminate pipe insulation adjacent to flanges and unions with insulating cement, trowelled down to pipe on a bevel.
- c. Fittings, Valves, Flanges, and Irregular Surfaces In Concealed Piping, Piping in Accessible Shafts, Attic Spaces, Crawl Spaces, Unfinished Rooms, Unfinished Spaces, and Tunnels: Sizing of canvas surface is not required.

3.06 INSTALLATION OF SHEET METAL JACKETING ON PIPING

- A. Secure jacketing to insulated piping with preformed aluminum snap straps and stainless steel strapping installed with special banding wrench.
- B. Jacket exposed insulated fittings, valves and flanges with mitred sections of aluminum jacketing.
 1. Seal joints with sealant and secure with preformed aluminum bands.
 2. Substitution: Factory fabricated, preformed, sectional aluminum fitting covers may be used in lieu of mitred sections of aluminum jacketing for covering fittings, valves and flanges.
 3. Substitution: Factory fabricated, preformed, sectional aluminum fitting covers or premolded polyvinylchloride fitting covers may be used in lieu of mitred sections of aluminum jacketing for covering fittings, valves and flanges.

3.08 FIELD QUALITY CONTROL

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- A. Field Samples: The Commissioner may at his discretion, take field samples of installed insulation for the purpose of checking materials and application. Reinsulate sample cut areas.

3.09 PIPING INSULATION SCHEDULE

- A. Insulate all cold service and hot service piping, and appurtenances except where otherwise specified.
- B. Schedule of Items Not to be Insulated:
1. Chrome plated piping, unless otherwise specified.
 2. Exposed piping in finished spaces, serving one fixture, or piece of equipment, and which connection from the main, branch, or riser, is 24 inches or less in length.
 3. Water heater blow-off piping.
 4. Air vents, pressure reducing valves, pilot lines, safety valves, relief valves.
 5. Water meters.
 6. Piping buried in the ground, unless otherwise specified herein.
 7. Items installed by others, unless otherwise specified herein.
 8. Sanitary drainage piping, unless otherwise specified herein.
 9. Mechanical equipment with factory applied steel jacket.
 10. Hot service piping 81 degrees F to 104 degrees F.
 11. Flanges and unions in Type E, F, and G service piping systems.
 12. Sprinkler and standpipe piping, unless otherwise specified.

3.10 COLD SERVICE INSULATION MATERIAL SCHEDULE

TYPE	SERVICE AND TEMPERATURES	INSULATION MATERIAL	PIPE SIZES (INCHES)	MINIMUM (NOMINAL) INSULATION THICKNESS (INCHES)
C	Fluids (except domestic cold water) 40 F to 80 F.	Fibrous Glass	1-1/2 & less	1
			Over 1-1/2	1-1/2
D	Domestic cold water, and as	Fibrous Glass	All Sizes	1/2

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TYPE	SERVICE AND TEMPERATURES	INSULATION MATERIAL	PIPE SIZES (INCHES)	MINIMUM (NOMINAL) INSULATION THICKNESS (INCHES)
	specified. 33 F to 80 F.			

A. NOTES:

1. Sprinkler and Standpipe Piping (First 10 feet connected to domestic water main within building): Insulate with same materials and thicknesses specified for domestic cold water.
2. Roof Drain Bodies Below Roof, Horizontal Conductor Piping Including Drops, and First Fitting on Vertical conductor: Insulate with same materials and thicknesses specified for domestic cold water.
3. Piping Serving Handicapped Accessible Lavatories:
 - a. Insulate exposed hot water supply and waste piping with flexible elastomeric foam pipe insulation.
 - b. Insulate exposed hot and cold water supply, and waste piping with under lav piping protection cover. Install fasteners thru each pair of holes in insulated safety wrap.

3.11 HOT SERVICE INSULATION MATERIAL SCHEDULE

	SERVICE AND TEMPERATURES	INSULATION MATERIAL	PIPE SIZES (INCHES)	MINIMUM (NOMINAL) INSULATION THICKNESS (INCHES)
E	Water and other fluids 105 F to 140 F.	Fibrous Glass	1-1/2 & Less Over 1-1/2	1 2
F	Water and other fluids 141 F to 250 F.	Fibrous Glass	6 & Less 8 & Up	2 2-1/2

3.12 SCHEDULE OF METAL JACKETING FOR INSULATED PIPE

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- A. Jacket exposed insulated risers with preformed sectional aluminum metal jacketing, in piping systems with service temperatures 105-450 degrees F, installed in finished rooms or finished spaces above Basement Floor Level.
 - 1. Exception: Preformed sectional aluminum metal jacketing is not required on piping in Mechanical Equipment Rooms, Steam Service Rooms, Penthouse, Mechanical Equipment Rooms and Machine Rooms.

- B. Install jacketing from floor to ceiling or from floor to first change of direction in riser, when such change in direction is a minimum of 9'-0" above finished floor, whichever is applicable.
 - 1. The aforementioned also applies to down feed piping systems.

- C. General:
 - 1. Jacket exposed insulated piping with preformed sectional aluminum metal pipe jacketing.

- D. Piping Exterior to Building: Jacket insulated piping with circumferentially corrugated aluminum jacketing.
 - 1. Lap longitudinal and circumferential joints a minimum of 2 inches.
 - 2. Secure jacketing in place with 1/2 inch x 0.020 inch thick aluminum bands secured with aluminum wing type seals, on maximum 12 inch centers.
 - 3. Cover insulated fittings, valves, and offsets with mitered sections of jacketing. Seal joints with mastic, and secure with aluminum strapping and wing seals.
 - 4. Factory fabricated, preformed fitting covers of same material as jacketing may be used instead of mitered jacketing.
 - 5. Install jacketing so as to avoid trapping condensation and precipitation.

END OF SECTION

SECTION 220800

CLEANING AND TESTING

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Testing Sprinkler System: NFPA-13.
- B. Testing Fire Standpipe System: NFPA-14.

1.02 SUBMITTALS

- A. Quality Control Submittals
 - 1. Test Reports (Field Tests): Submit data for each system tested, and/or disinfected; include date performed, description, and test results for each system.

1.03 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Perform factory testing of factory fabricated equipment in complete accordance with the agencies having jurisdiction.
 - 2. Perform field testing of piping systems in complete accordance with the local utilities and other agencies having jurisdiction and as specified.

1.04 PROJECT CONDITIONS

- A. Protection: During test Work, protect controls, gages and accessories which are not designed to withstand test pressures. Do not utilize permanently installed gages for field testing of systems.

1.05 SEQUENCING AND SCHEDULING

- A. Transmit written notification of proposed date and time of operational tests to the Commissioner at least 5 days in advance of such tests.
- B. Perform cleaning and testing Work in the presence of the Commissioner.

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- C. Pressure test piping systems inside buildings, at the roughing-in stage of installation, before piping is enclosed by construction Work, and at other times as directed. Perform test operations in sections as required and directed, to progress the Work in a satisfactory manner and not delay the general construction of the building. Valve or cap-off sections of piping to be tested, utilizing valves required to be installed in the permanent piping systems, or temporary valves or caps as required to perform the Work.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Test Equipment and Instruments: Type and kind as required for the particular system under test.
- B. Test Media (air, vacuum, water): As specified for the particular piping or system under test.
- C. Cleaning Agent (water): As specified for the particular piping, apparatus or system being cleaned.

PART 3 EXECUTION

3.01 PRELIMINARY WORK

- A. Thoroughly clean pipe and tubing prior to installation. During installation, prevent foreign matter from entering systems. Prevent if possible and remove stoppages or obstructions from piping and systems.

3.02 PRESSURE TESTS - PIPING

- A. Piping shall be tight under test and shall not show loss in pressure or visible leaks, during test operations or after the minimum duration of time as specified. Remove piping which is not tight under test; remake joints and repeat test until no leaks occur.
- B. Water Systems:
 - 1. Domestic water (potable cold, domestic hot and recirculation) inside buildings:

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- a. Before fixtures, faucets, trim and accessories are connected, perform hydrostatic test at 125 psig minimum for 4 hours.
 - b. After fixtures, faucets, trim and accessories are connected, perform hydrostatic retest at 75 psig for 4 hours.
- C. Gas Piping: Before backfilling or concealment perform air test of duration and pressure as required by the local gas company. However, for gas piping designed for pressures of from 4 inches to 6 inches water column, air test at 15 inches Hg for one hour, without drop in pressure. Test gas piping with air only. Check joints for leaks with soap suds.
- D. Drainage, Vent, Conductor and Roof Drain Piping (Inside Buildings): Perform tests before fixtures are installed. Test by filling the entire system with water, and allowing to stand for 3 hours, with no noticeable loss of water. Test joints under a minimum head of 10 feet of water, except the uppermost section. Test the uppermost section to overflowing.

3.03 TESTING OF EQUIPMENT, APPARATUS AND APPURTENANCES

- A. Relief Valves: Increase pressure in equipment or apparatus to relief valve setting, to test opening of valves at required relief pressures.

3.04 DISINFECTION OF POTABLE WATER SYSTEMS

- A. Disinfect potable water pipe and equipment installed in the Work of the Contract.
 1. Completely fill the piping, including water storage equipment if installed, with a water solution containing 50 mg/L available chlorine, and allow stand for 24 hours. Operate all valves during this period to assure their proper disinfection.
 2. After the retention period, discharge the solution to an approved waste and flush the system thoroughly with water until substantially all traces of chlorine are removed. Drain and flush water storage equipment if installed.

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- B. Connect plumbing fixtures and equipment and place the system into service. Prevent recontamination of the piping during this phase of the Work.

END OF SECTION

SECTION 221122

THERMOMETERS AND GAUGES

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Valves: Section 220523.

1.02 SUBMITTALS

- A. Product Data: Manufacturer's catalog sheets, specifications and installation instructions for each item specified.

1.03 QUALITY ASSURANCE

- A. Regulatory Requirements: Where Federal, NSF, ASME or other standards are indicated or required, products shall meet or exceed the standards established for material, quality, manufacture and performance.

PART 2 PRODUCTS

2.01 MANUFACTURERS/COMPANIES

- A. Dresser Instruments.
B. Marsh Bellofram.
C. Moeller Instrument Co.
D. Taylor Precision Products.
E. H.O. Trerice Co.
F. Weksler Instruments Corp.

2.02 THERMOMETERS

- A. General Design Features:
1. Scale Ranges: 1-1/2 times actual working temperature required for the particular application, as approved.
a. Maximum of two degrees between graduations and ten degrees between numerals.
b. When scale ranges are in excess of 100 degrees, maximum range between numerals

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- may be 20 degrees, or as otherwise approved for the particular application.
2. Direct Reading Thermometers: Bimetallic actuated, dial type, straight pattern, angle pattern, or adjustable angle pattern as required.
 3. Remote Reading Thermometers: Vapor tension actuated, or gas actuated type, with extension capillary tube of length as required for the particular application.
 - a. Case type as required for the particular mounting application.
 4. Thermometers for Sensing Liquid Temperature: Furnish with separable sockets.
 - a. Sockets for Use in Insulated Piping, Insulated Tanks or Similar Equipment: Extension lagging neck type, of length as required to compensate for insulation thickness, and proper immersion..

2.03 THERMOMETERS FOR MEASURING LIQUID TEMPERATURE

- A. Bimetallic Actuated Thermometers: Comply with ASME B40.3, Accuracy Grade A.
 1. Construction: Type 304 stainless steel, all welded construction, with clear acrylic plastic or shatterproof glass crystal.
 2. Dial: White enamel background with bold black figures and graduations.
 3. Head Size:
 - a. Installation in Piping: 3inch diameter.
 - b. Installation in Tanks and Similar Equipment: 5 inch diameter.
 3. Stem: Length as required for proper immersion, and to compensate for insulation thickness, with threaded connection for socket.
 4. External Calibration Device.
 5. Separable Socket:
 - a. Water Service: Brass or bronze.
- B. Vapor Tension or Gas Actuated Capillary Thermometers: Adjustable type, with micrometer type pointer or external calibration device, of design and materials as follows:
 1. Case and Ring: Stainless steel or non-ferrous material as approved, with clear acrylic or shatterproof glass lens. Provide case of type as required for the particular mounting application. Case adjustable, allowing rotation of 360°, and stem adjustment of at least 180°. Provide set screw for locking case in desired position.
 2. Movement: Brass with bronze bearings.
 3. Dial: White enamel background, with bold black graduations, numerals and pointer; 3-1/2 inch diameter.
 4. Capillary: Stainless steel.

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5. Bulb: Copper with union well connection.
6. Separable Socket:
 - a. Water Service: Brass or bronze.

2.04 PRESSURE AND COMPOUND GAUGES

- A. Type: Adjustable dial type with micrometer type pointer, or external calibration device, bronze bourdon tube, and bronze bushed rotary movement.
- B. Dial: White enameled background, and bold black graduations, numerals and pointer; 3-1/2 inch diameter.
 1. Scale Range:
 - a. Standard Gauges: Double normal operating pressure.
 - b. Compound Gauges: From 30" Hg vacuum to double normal operating pressure.
- C. Case: Cast aluminum, brass, or black finished phenolic.
- D. Accuracy: Guaranteed of within 1 percent in middle third of dial range.

2.05 PRESSURE SNUBBERS AND IMPULSE DAMPERS

- A. Pressure Snubbers: H.O. Trerice Co. Model 872.
- B. Impulse Dampers: H.O. Trerice Co. Model 870.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Thermometers:
 1. Install in accordance with the manufacturer's printed installation instructions.
 2. Install direct reading thermometers, when the application requires installation 6 feet or less above the floor or bottom of space in which installed, and remote reading type when the installation is over 6 feet.
- B. Pressure and Vacuum Gauges:
 1. Install in accordance with the manufacturer's printed installation instructions.
 2. For measuring liquid pressure, install gauges complete with stop cocks and drain cocks.
- C. Pressure Snubbers and Impulse Dampers:
 1. Install pressure snubbers in the piping connections to gauges installed in suction and discharge piping connections to close

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- coupled and base mounted circulating pumps driven by motors under 10 HP.
2. Install impulse dampers in the piping connections to gauges installed in suction and discharge piping connections to close coupled and base mounted circulating pumps driven by motors 10 HP and over.

END OF SECTION

SECTION 221123
GAS PIPING SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Extent of gas piping system work is indicated on Drawings and by the requirements of this Section.

1.02 SUBMITTALS

- A. Submit Shop Drawings indicating all operating pressures and catalog cuts for the following:
1. Gas piping materials
 2. Gas piping layout.
 3. Gas Safety Shut-Off Valves
 4. Gas Lubricated Plug Valves and Gas Cocks
 5. Strainers
 6. Pipe joint sealing materials
 7. Flanges and Gaskets
- B. Submit all the videotapes produced during the training. All tapes shall be labeled and turned over to the Commissioner within forty-eight (48) hours of training. Obtain receipt from the Commissioner that the tapes have been received.
- C. Submit copies of Certified Welder Qualifications. Submittal shall be made no less than seven (7) working days prior to commencement of work.
- D. Submit copies of the detailed procedure specification to be used for production welding in accordance with API 1104 Sample Procedure Specification Form.
- E. Submit a detailed schedule for the installation of gas piping and the welding thereof.

1.03 QUALITY ASSURANCE

- A. Comply with the rules and regulations of the Gas Company, New York City Building Department and with the latest regulations of the Administrative Code of the City of New York.
- B. When welding is to be performed as part of the work covered in this specification, the Contractor, before assigning any welder for this work, shall provide Commissioner

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Representative with the names of welders to be employed for this work. Welders installing gas piping at any pressure shall be qualified for all pipe sizes, wall thicknesses, and all positions in accordance with the latest editions of either API 1104 or ASME Section IX Boiler and Pressure Vessel Code and be re-qualified on an annual basis. Welding Special inspections will be conducted by certified inspector hired by City of New York under separate contract.

- C. All welding of gas piping shall be in full compliance with the latest editions of API 1104 and ASME Section IX Boiler and Pressure Vessel Code. Special inspection shall be performed in accordance with Section 406 of NYC Gas Code.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Gas piping shall be standard weight (Schedule 40) black steel pipe. Gas control, vent and relief piping shall also be standard weight, schedule 40 black steel pipe. Steel pipe shall be seamless or welded made in accordance with the Current Edition of the ASTM A53 Specification.
 - 1. In no case shall any gas pipe be less than 3/4". The sizes of pipe indicate nominal pipe size.
 - 2. Gas distribution piping for systems operating at 1/2 PSIG or less shall be in accordance with New York City Department of Buildings requirements and ANSI Z223.1-1974 (NFPA-54), National Fuel Code (as modified by the New York City Building Code).
 - 3. Gas distribution piping systems having a gas pressure above 1/2 PSIG shall conform to ANSI B31.2-1968, Fuel Gas Piping and requirements of the New York City Department of Buildings.
 - 4. Materials used in gas service and meter piping systems shall be in accordance with the requirements as specified by the gas utility company providing the services, and of the New York City Department of Buildings.
 - 5. Piping Joints for Gas Distribution Piping:
 - a. Piping at 1/2 psig (14" WC) and less:
 - 1) 4" and Smaller.....Screwed
 - 2) Over 4".....Welded
 - b. Piping over 1/2 psig (14" WC) to and including 3 psig:
 - 1) Under 4"Screwed
 - 2) 4" and Larger.....Welded

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- c. Portions of piping installed in concealed locations shall not have unions, tubing fittings, bushings, compression couplings or swing joints made by combination of fittings, and shall be welded regardless the size.
6. All welded gas distribution piping, less than or equal to 3 psig, shall be subject to special inspection. Special inspectors shall be retained by the Commissioner. In addition to independent pressure testing of the entire system, at least ten (10) percent of all welds, otherwise not required to be non-destructively tested, shall be subject to non-destructive testing (radiographed and/or subjected to ultrasonic testing). The minimum sampling shall be five (5) welds. All welds shall be radiographed at the Contractor's expense if any failure of any of the samples is found. Contractor shall make all necessary repairs at no cost to the City of New York.
7. Before any work is commenced on an item of construction requiring controlled inspection, all persons responsible for such controlled inspection shall be notified in writing at least seventy-two (72) hours prior to such commencement.

B. Fittings

1. Fittings for screwed gas piping shall be 150 lbs. black malleable iron fittings, conforming to ASTM A197, latest edition.
2. Compression type fittings and steel welding fittings shall be as specified and approved by the Gas Company.
3. Steel butt welding fittings shall conform to ANSI B16.9 requirements.
4. Fitting for control, vent and relief piping shall be 300 lb. black malleable iron screwed fittings conforming to ASTM A197, latest edition.

C. Flanges

1. All flanges shall be steel and compatible in type and pressure ratings with mating flange and shall comply with ANSI B16.5.
2. Flanges shall be welding neck or threaded end. Slip on flanges are not permitted.

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3. Where 150 pound steel flanges are bolted to Class 125 cast iron flanges, the raised face on the steel flange shall be removed.

D. Gaskets

1. Gaskets shall be compatible with the gas service on which they are used, without change to their chemical or physical properties.
2. Gasket shall be BLUE-GARD compressed asbestos free gaskets, style 3000 or GYLON gasketing style 3500, color: Fawn with Blue brand both as manufactured by Garlock Inc.
3. Gaskets of metal or metal-jackets, aluminum o-rings and spiral wound metal gaskets, or other materials, if approved by the Utility Company may be used.
4. Full face gaskets shall be used with all bronze and cast iron flanges.

E. Bolts and Nuts

Bolts and nuts shall be of best quality bolt steel with square head bolts and hexagon nuts with machine cut V-threads.

F. Thread joint sealant materials

Thread sealant to be used on natural gas piping shall be RectorSeal Corp No. 5, Oatey Great Blue pipe joint compound or approved equal. Thread sealant shall be a non-toxic, soft setting, slow drying sealant made from inert fillers. The joint sealant material shall not contain any Teflon. Teflon tapes shall not be used in natural gas lines. Teflon tapes are prone to tearing when pipes are being assembled and tightened and bits of torn tape can migrate into the fluid system, clogging valves, screens, and filters.

2.02 GAS SAFETY SHUT-OFF VALVES

- A. Gas safety shut-off valves shall be FM & UL listed, electric motor operated, normally closed, manual reset type. Valves shall be rising stem design with a straight through flow path with metal-to-metal seat and disc arrangement. The valve seat shall be stainless steel and the disc ductile iron. Valves shall be provided with a NEMA 4 enclosure modified for Class 1, Division II hazardous locations, be provided with an electrical terminal block and shall operate on 120 Volt, A.C., 60 Cycles, single phase. Valves shall meet ANSI Class

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VI leakage standard and shall be provided with a visual indicator to note the position of the valve whether "OPEN" or "SHUT".

- B. Gas safety shut-off valves 2" and smaller shall be threaded, 2 1/2" and larger shall be flanged. Flanged valves shall be provided with companion flange set by valve manufacturer.
- C. Gas safety shut-off valves shall be Maxon Corporation Series 808 for sizes 2" and smaller and Series 808-CP for valves 2-1/2" and larger. All valves shall be provided with trim package 1-1.

2.03 GAS LUBRICATED PLUG VALVES

- A. Lubricated plug valves for use on gas service shall be as approved by the Gas Company.
- B. Lubricated plug valves for use on gas distribution piping; mains, branches and base of risers shall be cast iron body, rated for 200 pounds cold working pressure and shall be wrench operated, except valves 10" and larger which shall be worm gear operated.
- C. Lubricated plug valves 2" and smaller shall be short pattern threaded; 2-1/2" and larger shall be regular pattern flanged.
- D. Lubricated plug valves shall be Nordstrom Valves Inc. Fig. 142 for sizes 2" and smaller, Fig. 115 for sizes 2-1/2" through 4" inclusive, Fig. 165 for sizes 6" and 8", and Fig. 169 for sizes 10" and larger; or Walworth Fig. 1796 for sizes 2" and smaller, Fig. 1700F for sizes 2-1/2" through 8", and Fig. 1707F for sizes 10" and larger.

2.04 GAS COCKS

- A. Gas cocks shall be for use only as manual gas shut-off valves at each piece of gas burning equipment; shall be of the plug type, bronze construction with check, nut and washer bottom and tee handle.
- B. Gas cocks shall be Fig. 10596 as manufactured by A. Y. McDonald Mfg. Co., or Series 52 as manufactured by Conbraco Industries Inc.
- C. Gas cocks shall only be used on piping 1" and smaller.

PART 3 - EXECUTION

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3.01 INSTALLATION

- A. Gas service and gas distribution piping, number and distribution of appliances, shall be installed as indicated on the Drawings and shall be in accordance with the rules and regulations of the Gas Company and according to the latest regulations of the Administrative Code of the City of New York and shall meet the requirement of the Department of Buildings.
 - 1. Contractor shall arrange for inspection and adjustment of all gas appliances of the contract, so that they will properly and safely operate with natural gas.
- B. Provide gas lubricated plug valves where specified, shown on Drawings or otherwise required for control of gas in the distribution piping; mains, branches and at the base of each riser. An accessible manual gas cock or lubricated plug valve of the same size as the pipe shall be installed at each piece of gas burning equipment, to allow for isolation of the equipment and where indicated on Drawings.
- C. Final connections to burner pilot lights and boiler gas trains shall be made by the Contractor.

3.02 GAS PIPING VENTING

- A. Gas service piping shall have vent and relief piping installed and sized in full accordance with the requirements of the serving utility.
- B. Gas train venting (Boilers and Water Heater):
 - 1. Gas vents from boilers shall not be combined with the water heater gas vents.
 - 2. Gas vents from one boiler shall not be manifolded to gas vents from other boilers.
 - 3. All normally open vent valves must be piped separately and directly to the outside.
 - 4. Vent piping from pilot system (firm gas) and main burner system (interruptible gas) cannot be combined.
 - 5. Gas vents from gas pressure regulator and high and low gas pressure switches can be manifolded.
 - 6. All gas vents shall be equipped with a utility approved weatherproof vent cap.
 - a. Vents shall terminate at least 10' laterally from any building opening, window, door or ventilation

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air intake duct. Vents shall terminate a minimum of 10' above grade.

- b. If the above is not possible due to the location of existing windows, then vents shall terminate a minimum of 18" above the parapet. Vents shall terminate at least 10' away from any chimney. Vents shall not be routed on the front façade of the building.

7. Vents outlets shall not be located under a window overhang projection.

8. The size of the vent lines shall be as indicated on the Drawings. If the installation of the vent lines differ from the Drawings, the Contractor shall increase the size of the vents as directed by the Commissioner at no additional cost to the City of New York.

3.03 LABELING

- A. General Requirements: Gas piping operating at different pressures shall have labeling markers indicating operating pressure within that piping.
- B. All valves shall be suitably tagged to indicate the operating pressure level within the distribution piping.

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SECTION 221429

SUMP PUMP, SUBMERSIBLE

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Earthwork: Section 310000.
- B. Cast-In-Place Concrete: Section 033000.
- C. Painting: Section 099000.
- D. Valves: Section 220523.
- E. Raceways and Boxes for Electrical System: Section 260533.
- F. Motors Starters and Control Equipment: 262419.

1.02 SUBMITTALS

- A. Product Data:
 - 1. Catalog sheets, specifications, installation instructions, including pump capacity curve (capacity vs. head) and electrical schematics.
 - 2. Catalog sheets, specifications, and installation instructions for the sump basin and cover.
 - 3. Catalog sheets, specifications and installation instructions for the sump cover and sump frame.

PART 2 PRODUCTS

2.01 SUMP PUMP

- A. Type: Completely submersible, automatic operation, with a screenless suction, non-clog impeller, and lifting bail.
 - 1. Motor Requirements:
 - a. Equip submersible motor with built-in thermal overload protection.
 - b. Power Requirements: Design to operate on a single phase, 60 Hertz, 120 volt

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- circuit (NEMA standard motor voltage 115 V).
- c. Power Cord: Waterproof, oil resistant, terminating with a 3 prong grounding type cord cap. Length as required.
- B. Materials:
- 1. Casing, exterior covers and caps: Brass or bronze.
 - 2. Impeller: Bronze.
 - 3. Shaft: Steel, sealed against contact with moisture.
 - 4. Exterior fasteners: Stainless steel.
- C. Liquid Temperature: Design to handle liquids up to 140 degrees F maximum.

2.02 PUMP CONTROLS AND ACCESSORIES

- A. Liquid Level Control Device: Construct of corrosion resistant materials, with components designed for installation within the sump completely waterproof, including oil resistant grounding type power cord.
- B. High Water & Oil Detection Alarm: Factory wired assembly as part of the control panel with high water alarm & high oil visual & audible alarm w/ contacts for connection to building automation system.
- C. Control Panel: Factory wired, housed in a NEMA-1 enclosure; alternator liquid level control actuated. Include motor controller, H-O-A switch, run light, and circuit breaker for each pump motor.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install the Work of this Section in accordance with the manufacturer's printed installation instructions unless otherwise specified.
- B. Install liquid level control device at proper elevation to produce specified sump drawdown. Secure control device to pump discharge pipe with

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clamps or to side of sump basin with corrosion resistant brackets and fasteners.

- C. High Water Alarm: Install high water alarm and make electrical connections. Install liquid level control device at proper elevation to activate alarm at specified liquid depth. Secure control device to pump discharge pipe with clamps or to side of sump basin with corrosion resistant brackets and fasteners.
- D. Control Panel: Install and make electrical connections. Install liquid level control devices at elevation required to produce specified sump drawdown. Secure control devices to pump discharge pipe with clamps, or to side of sump basin with corrosion resistant brackets and fasteners.

3.02 PUMP OPERATION

- A. Single Pump System: Set level controls to start pump when liquid depth in sump reaches 12 inches and stop pump when liquid depth is 6 inches.
- B. High Water Alarm Setting: Set control device to sound alarm when liquid depth in the sump reaches 16 inches.

3.03 FIELD QUALITY CONTROL

- A. Test sump pump system for proper operation at specified liquid depths.
- B. Test high water alarm for proper operation at specified liquid depth.

END OF SECTION

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SECTION 223301

DOMESTIC WATER HEATER

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Valves: Section 220523.
- B. Piping: Section 220410.

1.02 SUBMITTALS

- A. Product Data: Catalog sheets, specifications and installation instructions for each water heater, gas vent pipe, fittings, and accessories required for the vent system.
- B. Contract Closeout Submittals:
 - 1. Operation and Maintenance Data: Deliver 2 copies, covering the installed products, to the Commissioner.
 - 2. Warranty: Copy of specified warranty.

1.03 REGULATORY REQUIREMENTS

- A. Water heater shall bear the seal of the American Gas Association.
- B. Comply with the State Energy Conservation Construction Code.

1.04 WARRANTY

- A. Manufacturer's Warranty: Three year warranty for the glass lined water heater tank.

PART 2 PRODUCTS

2.01 WATER HEATER

- A. Tank: Welded steel, factory tested at 300 psi and rated for 150 psi working pressure.
 - 1. Glass lining permanently bonded to tank interior surface.
 - 2. Tank nipples factory installed.
 - 3. Renewable magnesium anode.
 - 4. Corrosion resistant dip tube.

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5. Drain and relief valve tapping.
 6. Renewable bronze boiler drain.
 7. Flue heat baffle.
 8. Draft hood.
- B. Burner: Aluminized steel or cast iron, adjustable, or self-adjusting air-gas mixture control.
- C. Thermostat: Automatic, adjustable, with automatic pilot, overheat control, and pilot operated automatic gas shut off.
- D. Outer Casing: Steel, with baked enamel or acrylic finish.
1. Access door for servicing controls and burner.
- E. Pressure-Temperature Relief Valve: AGA Z21.22; bronze body with stainless steel internals and threaded blow-off connection.

2.02 GAS VENT SYSTEM

- A. UL listed Type B vent.
- B. Construction: Double wall, comprised of galvanized steel outer casing and an aluminum alloy inner pipe separated by an air space; Metalbestos Type RV.
- C. Accessories: Connectors, increasers, flashing, storm collar, thimble and vent top shall be products of the vent pipe manufacturer.

2.03 GAS VENT PIPE

- A. 18 gage galvanized sheet steel with longitudinal groove type seam and slip fit joints with 4 inch engagement between sections.

2.04 MORTAR CEMENT

- A. High Temperature: Combustion Engineering, Super #3000; Harbison-Walker, Harwaco Bond; National Refractories (Kaiser), Trowleze.

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PART 3 EXECUTION

3.01 INSTALLATION

- A. Install the Work of this section in accordance with NFPA 54, NFPA 211, and the manufacturer's printed installation instructions, unless otherwise specified.

- B. Water Heater: Install heater on a level, firm base.
 - 1. Install the pressure - temperature relief valve in the dedicated tank tapping. Pipe relief valve blow-off to a point 6 inches above floor.
 - 2. Provide gate valves on hot and cold water connections and an AGA lubricated plug valve on the gas connection.
 - 3. Make final gas, and water piping connections with unions.

- C. Flue Vent Piping:
 - 1. Do not install vent piping within 12 inches of combustible materials.
 - 2. Secure each joint with 3 sheet metal screws.
 - 3. Support horizontal piping on 5 foot centers, maximum spacing.
 - 4. Cut flue opening into the masonry chimney. Install a standard weight steel pipe thimble into flue opening. Cement thimble into place with high temperature mortar.
 - 5. Seal vent pipe connection to thimble with high temperature mortar cement.
 - 6. Flush and fill tank; do not light burner until tank is full, and entrapped air is eliminated.

END OF SECTION

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SECTION 224200

PLUMBING FIXTURES

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Joint Sealers: Section 079200.

1.02 SUBMITTALS

- A. Product Data: Catalog sheets, specifications, roughing dimensions, and installation instructions for each item specified except fasteners.
1. Deliver cut out data for countertop fixtures to the Commissioner.
- B. Samples:
1. Water Closet Seat: One seat if other than product specified. Sample will be returned and if approved, may be installed on the Project.

1.03 QUALITY ASSURANCE

- A. Regulatory Requirements:
1. Comply with applicable requirements of FS WW-P-541, and the following standards:
 - a. ANSI/ASME A112.6.1M - Floor Affixed Supports for Off-the-Floor Plumbing Fixtures for Public Use.
 - b. ANSI/ASME A112.18.1M - Plumbing Fixture Fittings.
 - c. ANSI/ASME A112.19.1M - Enameled Cast Iron Plumbing Fixtures.
 - d. ANSI/ASME A112.19.2M - Vitreous China Plumbing Fixtures.
 - e. ANSI/ASME A112.19.6 - Hydraulic Requirements for Water Closets and Urinals.
 2. Materials and installations designated as handicapped accessible shall conform with the following:
 - a. ANSI A117.1 - Buildings and Facilities - Providing Accessibility and Usability for Physically Handicapped People.
 - b. The Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG), (Appendix A to 28 CFR Part 36).

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- c. The Uniform Federal Accessibility Standards (UFAS), (Appendix A to 41 CFR Part 101-19.6).
- 3. Each fixture carrier support shall be listed by model number in the fixture support manufacturer's Fixture Support Selection Guide as being recommended for support of the appropriate fixture.
- B. Plainly and permanently mark each fixture and fitting with the manufacturer's name or trade mark.
- C. Acid resistant surfaces shall be plainly and permanently marked with the manufacturer's label or symbol indicating acid resistance.

1.04 MAINTENANCE

- A. Special Tools: Deliver to the Commissioner.
 - 1. Furnish the following tools labeled with names and locations where used.
 - a. Keys for stops (furnished with stops).
 - b. Tools for Vandal Resistant Fasteners: Two for each type and size.

PART 2 PRODUCTS

2.01 MATERIALS - GENERAL

- A. Vitreous China: First quality, smooth, uniform color and texture, with fused on glaze covering surfaces exposed to view.
 - 1. Surfaces shall be free of chips, craze, warpage, cracks and discolorations. Surfaces in contact with walls or floors shall be flat, with warpage not to exceed 1/16 inch per foot.
 - 2. Color: White.
- B. Porcelain Enameled Cast Iron: Smooth, uniform color and texture, having fused on glaze covering surfaces exposed to view.
 - 1. Material shall show no cracks, chips, craze or discolorations.
 - 2. Enameled surfaces shall be acid resistant unless otherwise specified.
 - 3. Color: White.
- C. Fixture Trim: Brass, bronze, or stainless steel construction; consisting of supply and waste fittings, faucets, traps, stop valves,

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escutcheons, sink strainers, nipples, supplies, and metal trim.

1. Brass piping: Ips standard weight, with standard weight, 125 lb cast brass fittings.
2. Brass tubing: 18 B & S gage.
3. Stainless steel: 18-8 Type 302 or 304 unless otherwise specified.

D. Fixture Trim Finishes:

1. Brass or Bronze: Polished or satin finished chrome plating, 0.02 mil chromium over 0.2 mil nickel plating.
2. Stainless Steel: Invisible welds and seams, and unless otherwise specified, polished to No. 4 commercial finish.

E. Fixture Hold-down Bolts: Steel, plated for corrosion resistance.

1. Cap nuts: Metal, polished and chrome plated.

F. Combination Faucets: Faucets shall turn counter to each other for the on and off positions.

G. Vandal Resistant Fasteners: Torx head with center pin.

2.02 P-1/1A WATER CLOSETS

A. Fixtures: Vitreous china, full size, elongated bowl with integral flushing rim and jet; trapway at the rear and the outlet centered between a pair of hold down bolt holes.

1. Trapway size: Pass minimum ball of 2 inches.
2. Trap seal: 2 inches minimum.
3. Water surface area: 12 inches x 10 inches minimum.
4. Provisions for flushing:
 - a. 1-1/2 inch spud for flush valve operation.
5. Wall Supported Fixture Heights:
 - a. Standard Fixture: 14 to 15 inches from finished floor to rim.
 - b. Handicapped Accessible Fixture: 17 to 19 inches from finished floor to top of seat (15-13/16 to 17-13/16 inches from finished floor to top of rim based on 1-3/16 inch seat height).
6. Water closet shall be Kohler K-4325, Crane Plumbing 3-446NS, American Standard 2257.001 or Mansfield Plumbing Products #1301

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- B. Operation: Fixture shall flush satisfactorily without extraordinary rise of water level in the bowl.
1. Maximum gallons of water per flush: 1.6 gallons.
- C. Closet Seat: Extra heavy duty, commercial design; Model 1655-C by Bemis Mfg. Co., Model No. 527-CH by Beneke Corp., or Model No. 9500C by Church Seat Co.
1. Material and Construction: Solid plastic, open front, less cover, molded in one piece with no joints, seams or crevices.
 2. The manufacturer's name shall be molded into the seat.
 3. Metal check hinges shall be integrally molded into the seat. Hinges, inserts, bearings and posts shall be of brass or stainless steel. Cover upper post and metal exposed above fixture rim with plastic to match seat.
 4. Surface shall be hard, polished, impervious to moisture, and not affected by the action of uric acid.
 5. Color: White.
- D. Water Closet Types:
1. P-1 Water Closet: Wall hung, back outlet, top spud inlet, siphon jet action, activated by means of an exposed flush valve.
- E. Closet Carrier (For Wall Hung Water Closets): Commercial type cast iron combination chair carrier and drainage fitting with the following:
1. Face Plate: Cast iron; height adjustable.
 2. Feet: Cast iron, adjustable, with provisions for bolting to the floor slab.
 3. Studs, Nuts and Washers: Steel, treated for corrosion resistance.
 4. Fixture Washers: Plastic.
 5. Adjustable Closet Connection: Cast iron, steel, or ABS plastic.
 6. Fitting Ends: Compatible with the drainage piping system.
 7. Gasket: Impregnated felt or neoprene closet gasket; lead or neoprene face plate gasket.
 8. Stud thread protectors.
 9. Factory painted.
 10. Trim: Polished chrome plated metal cap nuts and washers.
 11. Vandal Resistant Trim: Polished chrome plated metal cap nuts and washers retained with vandal resistant set screws.

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- F. Ferrous metal members of carriers and supporting devices with the exception of chrome plated or porcelain enameled cast iron, shall be factory painted for corrosion resistance.

2.03 P-2/2A LAVATORY

- A. Fixture: Vitreous china, unitized construction, straight front and sides, flat top graded to bowl, cast-in soap dish, anti-splash rim and front overflow; designed for concealed arm supports.
1. Dimensions: 20 inches long, 18 inches front to back, 3-1/2 inch front and side apron.
 2. 4 inch high integral back.
 3. Lavatory shall be American Standard 0954000020 with 0059020020 shroud/knee guard, Mansfield Plumbing Products #2040 complete with vitreous china shroud, Zurn Z5324-PED or Crane Plumbing Serena 179V. Provide with holes for concealed arm carrier systems. Color: white.
- B. Supply Fitting: Individual deck mounted self-closing faucets with the following features:
1. Maximum Flow: 0.5 gpm at 80 psi.
 - a. Exception: Metering faucets shall have a maximum flow of 0.25 gallons per cycle
 2. Over rim spout with aerator.
 3. Renewable operating units.
 4. Indexed operators.
 5. Vandal resistant assembly.
 6. 1/2 inch inlet, lock nut and coupling nut.
- C. Waste Fitting: 1-1/4 inch tailpiece with cast brass flat perforated strainer grate.
- D. Trap: Cast brass, non-adjustable P trap, 1-1/4 inch tubing inlet, 1-1/2 inch ips outlet.
1. Bottom cleanout plug.
 2. Ips brass nipple with solid cast brass escutcheon.
 3. Provide offset tailpiece for handicapped lavatory.
- E. Supplies: 3/8 inch ips brass with key operated stops and solid cast brass escutcheons.
1. Wall Supplies: Angle stops with keys.
 2. Floor Supplies: Straight stops with keys.

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- F. Faucet Hole Cover: Cast brass, rounded top, and threaded shank, with backing plate, lock washer and nut.
- G. Provide insulation on waste & supply piping under P-2A lavatory. McGuire or approved equal.
- I. Floor Mounted Carrier Supports: Steel pipe uprights, 1-1/4 inch ips minimum diameter, or 1 inch x 3 inch steel tubing uprights, with cast iron or welded steel feet, drilled for bolting to the floor construction. Each carrier shall be provided with the appropriate fixture supporting devices specified, or recommended by the carrier manufacturer's Fixture Support Selection Guide. : Ferrous metal members of carriers and supporting devices with the exception of chrome plated or porcelain enameled cast iron, shall be factory painted for corrosion resistance.
 - 1. Concealed Arms: Steel, with fixture locking lugs, leveling screws and a means of attaching, positioning and securing the fixture to the carrier.
 - a. Trim: Polished, chrome plated metal escutcheon to space fixture two inches from the wall.

2.05 P-3 URINALS

- A. Wall Supported Fixture: Vitreous china, with elongated rim, integral trap and extended side shields.
 - 1. Dimensions (approx.): 28 inches high, 18 inches wide, 12 inches front to back.
 - 2. Method of Support: Wall hangers and lugs for bearing plate bolting.
 - 3. Urinal shall be American Standard 6590.1250, Crane Plumbing 7399.10, Kohler K-4904-ET, Mansfield #422, Sloan Model SU-1000-0, Zurn Z5758.207.00 Contractor needs to exercise care when ordering flush valve as some urinals may not work with the flushometers
- B. Operation: Fixture shall flush satisfactorily with a maximum of one gallon of water and be accomplished without extraordinary rise in water level in the bowl.
- C. Fixture Types:

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1. P-3 Urinal: Wall supported, washout action, back outlet, and a 3/4 inch top spud inlet for an exposed flush valve connection.
- D. Floor Mounted Carrier Support (For Wall Hung Urinals): 1-1/4 inch ips steel pipe upright supports with block feet arranged with provisions for bolting to the floor slab, and with the following:
1. Hanger Plate: Steel, height adjustable with provisions for mounting and positioning the fixture hanger.
 2. Bearing Plate: Steel, adjustable, with bearing studs, nuts and washers.
 3. Studs, Nuts and Washers: Steel, treated for corrosion resistance.
 4. Fixture Washers: Plastic.
 5. Stud thread protectors.
 6. Factory Painted.
 7. Trim: Polished chrome plated metal cap nuts and washers.
 8. Vandal Resistant Trim: Polished chrome plated metal cap nuts and washers retained with vandal resistant set screws.
- B. Ferrous metal members of carriers and supporting devices with the exception of chrome plated or porcelain enameled cast iron, shall be factory painted for corrosion resistance.

2.05 FLUSH VALVES

- A. Control Mechanism: Diaphragm or piston operated; do not intermix types.
- B. Maximum Flow Per Flush:
1. Water Closet: 1.6 gallons.
 2. Urinal: 1.0 gallons.
- C. Flush Valve Assemblies: Flush valve, stop-check, tailpiece, vacuum breaker, and fixture spud coupling, including wall and spud flanges.
- D. Valve Materials:
1. Valve Body: Brass or bronze.
 2. Valve Internal Parts: Corrosion resistant materials that will not be affected by the action of or contact with water.
- E. Operating Features:
1. Valve operators shall employ the non hold-open feature.

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2. Piston type valves shall be field adjustable.
- F. Valve Operators:
1. Oscillating Handle: 4 inch brass spring loaded self return handle.
 2. Maximum Activation Force (Handicapped Accessible Operators): 5 lbf.
- G. Assembly Components:
1. Flush Pipe: Seamless brass tubing with integral vacuum breaker, No. 18 B & S gage.
 2. Fitting: Cast brass.
 3. Stop-Check: Brass or bronze body, non rising stem stop valve with a built-in automatic check.
 - a. Exposed Stop-Check: Screwdriver operated with protective cap.
 4. Spud Coupling and Wall Flanges: Cast brass.

PART 3 EXECUTION

3.01 FIXTURE SUPPORT AND SUPPORTING DEVICE INSTALLATION

- A. Wall Mounted Carrier Supports: Install the following fixtures on wall mounted carrier supports:
- C. Attach the following fixtures to the building wall construction:
- D. Fixture Supporting Devices: Attach fixtures by means of the following fixture supporting devices attached to carrier supports.

FIXTURE	SUPPORTING DEVICE
Lavatory, VC, with back	Concealed arms.
Water Closet	Bolt to comb. carrier and drainage fitting.
Urinal	Fixture hanger and bearing plate.

- F. Secure exposed external components in place with vandal resistant fasteners or devices which cannot be removed without the use of special tools.

3.02 FIXTURE INSTALLATION

- A. Install the Work of this section in accordance with the manufacturer's printed installation instructions.

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- B. Install fixtures level and at proper height, tighten connections, and install hold-down bolts, cap nuts and cover plates, where required.
- C. Secure exposed external components in place with vandal resistant fasteners or devices which cannot be removed without the use of special tools.
- I. Lavatories:
 - 1. Mount lavatories 31 inches from finished floor to rim unless otherwise specified.
 - 2. Mount handicapped accessible fixtures 34 inches from finished floor to rim. Refer to Standard Drawing No. 93/S3013 bound herein, for special clearances required for handicapped accessible fixtures.
 - 3. Caulk joint between fixture back and wall with Type 1D sealant; strike a neat joint.
- K. Water Closets:
 - 1. Wall Hung Fixtures:
 - a. Standard Fixtures: Install wall hung fixtures 15 inches from finished floor to rim unless otherwise specified.
 - b. Handicapped Accessible Fixtures: Install fixtures 18 inches from finished floor to top of seat (16-13/16 inches floor to rim based on 1-3/16 inches seat height).
 - c. Set bearing nuts to position fixture 1/16 inch clear of finished wall.
 - d. Caulk the joint between fixture back and wall with Type 1D sealant; strike a neat joint.
 - 2. After connections are tightened, install cap nuts and washers.
 - 3. Install water closet seats when directed.
- L. Urinals:
 - 1. Wall Hung Fixtures:
 - a. Standard Fixtures: Install wall hung fixtures 24 inches from finished floor to rim.
 - b. Handicapped Accessible Fixtures: Install wall hung handicapped accessible fixtures 14 inches (minimum) to 17 inches (maximum) from finished floor to rim.
 - c. Set bearing nuts on floor mounted carrier supports to position wall hung

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- fixtures 1/16 inch clear of finished wall.
- d. Caulk the joint between fixture back and wall with Type 1D sealant; strike a neat joint.
 2. After connections are tightened, install cap nuts and washers.
- M. Flush Valves:
1. Standard Fixtures: Install flush valves on fixture centerline, and at following heights above fixture rim or back to centerline of water inlet to flush valve.
 - a. Water Closet: 11-1/2 inches.
 - b. Urinal: 11-1/2 inches.
 2. Handicapped Accessible Fixtures: Install flush valves on fixture centerline, and at following height above finished floor to centerline of flush valve operator. Distance between centerline of flush valve operator and centerline of water inlet is 1-1/2 inches.
 - a. Water Closet: Approximately 31-1/2 inches, and mounted on wide side of stall.
 - 1) Coordinate mounting height with Construction Work Contractor to avoid interference with grab bar, and to facilitate flush valve servicing.
 - b. Urinal: Maximum 44 inches.
 3. Set oscillating handles parallel to wall on exposed installation.
 4. Slip joints in flush pipe connections allowed only at fixture spud and vacuum breaker ends; others shall be screwed connections.
 5. Score tubing ends before assembling to assure tight slip joint connections. No score marks shall be visible after assembly.
 6. In utility corridors, solder screwed flush pipe connections.

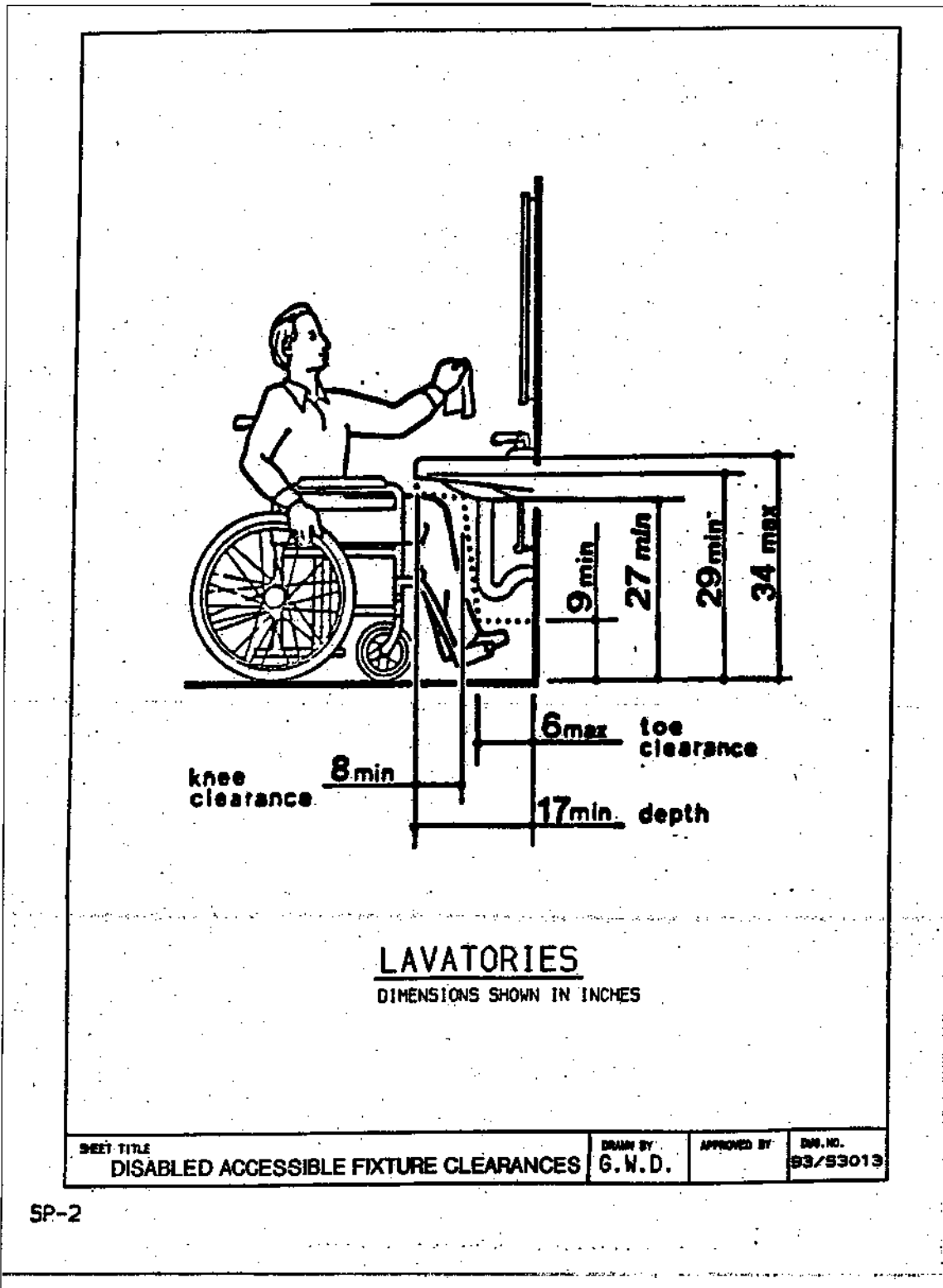
3.03 CLEANING, FLUSHING AND ADJUSTMENT

- A. Clean fixture and trim. Remove grease and dirt; polish surfaces but leave stickers and warning labels intact.
- B. Flush supply piping and traps; clean strainers.

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- C. Adjust stops for proper delivery.
- D. Adjust metering faucets for proper timing.

END OF SECTION



LAVATORIES
DIMENSIONS SHOWN IN INCHES

SHEET TITLE	DRAWN BY	APPROVED BY	DWG. NO.
DISABLED ACCESSIBLE FIXTURE CLEARANCES	G.W.D.		93/S3013

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SECTION 224453
PUMPS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide all electrical motor-driven pumps as indicated on the Drawings and as specified herein.

1.02 SUBMITTALS

- A. Manufacturer's installation and operation instructions, catalog sheets, specifications, and maintenance manuals for each item specified.
- B. Shop Drawings.
 - 1. Cuts of each pump, indicating parts and materials.
 - 2. Motor data.
 - 3. Wiring Diagrams
- C. Submit a compliance affidavit, if all items in subparagraph B match contract documents. Manufacturer's technical product data submission will be required if a substitution is proposed.
- D. Certificates:
 - 1. Certified pump test curves
- E. Maintenance data:
 - 1. Spare parts
 - 2. Maintenance manual

1.03 QUALITY ASSURANCE

- A. Each pump control panel must have UL label and panel wiring shall comply with the latest New York City Electrical Code.

PART 2 - PRODUCTS

2.01 MOTORS

- A. Provide motors and motor starters in accordance and in compliance of the requirements of Section 262419: Motors and Controls.

2.02 PUMPS-GENERAL

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- A. The casing for pumps shall be of close-grained cast iron for bronze fitted pumps or bronze on all bronze pumps. The waterways must have large cross-section areas with smooth turns so that the water will pass through at a low velocity without shock. Suitable openings shall be provided for the suction gauge, discharge gauge, air vent and cock. Openings shall be tapped and plugged.
- B. Unless otherwise specified, the shaft shall be of the best grade of 18-8 stainless steel and of ample size to transmit safely the maximum amount of power required. Shaft shall be provided with ample keyway and key to accurately hold the impeller in place. The impeller shall be secured to the shaft using a nut and locking washer. The impeller shall be hydraulically balanced for all pressures and shall be of bronze, hand finished on the inside, machine turned and polished on the outside, dynamically balanced at all speeds, and with liberal keyway to fasten to shaft. Coupling shall be flanged and of the flexible type with pin and rubber bushing construction. That portion of the shaft passing through the pump casing and stuffing boxes shall be encased in a bronze sleeve, securely fastened to the shaft.
- C. A name-plate showing the serial number, discharge GPM and Head of each pump shall be attached to the respective pump. The necessary wiring and controlling devices will be furnished and installed complete under the Electrical Division, unless otherwise specified.

2.03 RE-CIRCULATING PUMP (DOMESTIC HOT WATER)

- A. Where indicated on Drawings, provide in hot water circulating piping inline re-circulating pump units with all connections as shown. Hot water circulating pumps shall be in-line bronze body, with mechanical seal and stainless pump shaft. Pump shall be Weil Pump Co., Thrust Co., or Bell and Gosset, Taco Pumps, Grundfos Pumps Corporation U.S.A or Armstrong Pumps Inc or approved equal.
- B. Capacity, head, model of pump and pump motor requirements shall be as shown on the Drawings or specified herein.
- C. Provide immersion type automatic electric control switches to control the operation of circulating pumps. The switches shall have bulb installed in a bulb well into the circulating line, and shall be arranged for conduit connection.
- D. Electric Control shall have an adjustable range from 40°F to 180°F., where temperature of water in storage tank is 140°F. Aquastat shall be a Honeywell L4006A with bulb assembly.

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- E. A fused motor switch and automatic starter providing overload and low voltage protection will be furnished and installed by Contractor, who will do all wiring required.
- F. Submit shop drawings of pump and motor for approval.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Pumps

- 1. Install all pumping apparatus as detailed on the Drawings, or as specified herein, or as recommended by the respective Manufacturer, to be completely operable for its intended use.
- 2. Make all required connections of pumps to the piping systems.

3.02 DEMONSTRATION

- A. The service of a factory trained representative shall be made available on the job site for start-up and for instructing the Custodian (or building manager) and staff in the operation and maintenance of each system installation.

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SECTION 230501

BASIC HEATING, VENTILATING AND AIR CONDITIONING REQUIREMENTS

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Provide labor, materials, tools, machinery, equipment, and services necessary to complete the HVAC Work under the Contract. All systems and equipment shall be complete in every aspect and all items of material, equipment and labor shall be provided for a fully operational system and ready for use. Coordinate the work with the work of the other trades in order to resolve all conflicts without impeding the job progress.

B. The Work includes but is not limited to the following systems, equipment and services:

Upgrade the existing HVAC systems by replacing four (4) of the existing packaged rooftop units, and partially modify air distribution system to accommodate the calculated load.

Provide two (2) split system air conditioning units serving the computer room and the elevator machine room.

Provide exhaust fan and associated ductwork serving elevator machine room.

Replace existing oil-fired heating boiler with a gas-fired hot water heating boiler, and provide all associated equipment included in the heating system, such as pumps, expansion tank, air separator, chemical feeder, associated pumps and control.

Provide an web based Building Management System (BMS) to control, monitor and/or alarm all the existing and new building systems.

C. Start-up services shall be included in the bid.

D. All systems, equipment and services specified herein shall be provided complete and ready for use.

1.02 RELATED WORK

A. General Conditions General Requirements

B. Division 26 Electrical Sections

1.03 SUBMITTALS

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- A. General: Unless indicated otherwise in the specific technical section, if a particular product specified in the technical section is being provided, manufacturer's qualifications and samples (except as listed below), are not required to be submitted. Manufacturer's product data, installation instructions, samples requiring color or texture approval, samples showing thickness and type of material, shop drawings, and calculations are to be submitted. Schedules, startup manuals, operation and maintenance manuals, and shop drawings are always required to be submitted.
- B. The following Submittals are required for all Sections of Division 23-Heating, Ventilating, and Air Conditioning. Specific "Supplemental Submittals" or additional information to that listed below that are required to be submitted are defined in each individual technical section.
1. Product Data: Submit manufacturer's product data for equipment including catalog sheets or cuts, specifications, capacity, performance charts, test data, materials, dimensions, weights, furnished specialties and accessories; and installation instructions. Submit start-up instructions where applicable.
 2. Shop Drawings: Submit manufacturer's shop drawings detailing equipment assemblies and indicating dimensions, weight, loadings, required clearances, method of field assembly, components, location and size of each field connection.
- C. Where indicated in the Supplemental Submittals of the technical sections, the following submittals are defined as follows:
1. Maintenance Data: Submit maintenance data and parts list. Include this data and the product data in the maintenance manual in accordance with the requirements of General Conditions.
 2. Test Report: Submit factory certified test results prior to shipping.
 3. Certificates: Submit written affidavit stating that the Contractor has started up and demonstrated (in the presence of the Commissioner) that the equipment is operating properly as designed.
- D. Piping, Ductwork, and Wiring Diagrams: Submit a complete wiring diagram, ductwork layout, and piping layout of all equipment. All parts of the installation shall be indicated exactly as installed and shall be properly identified. Valve identification numbers shall agree with valve tags of Section

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230553: HVAC Identification and all piping shall be clearly shown and labeled.

- E. Coordination Drawings: Provide complete coordination Drawings showing interface of all mechanical trades with the Architecture of the Building. All copies are to be signed. The Contractor is to keep a copy of the signed coordination drawing on the site.

1.04 QUALITY ASSURANCE

- A. Provide manufacturer's qualifications that indicate that the firms are regularly engaged in manufacture of equipment, of types, materials, and sizes required, whose products have been in satisfactory use in similar service for not less than 3 years.
- B. Codes and Standards: All equipment furnished and installed shall meet or exceed the referenced Standards and Codes in all respects - installation, performance, etc.

References and industry standards listed herein and in other HVAC Sections are applicable to the Work specified in the Section. Unless more restrictive criteria is explicitly called-out for in other HVAC Specifications or mandated by the Building Code, the requirements described in the referenced standards below shall be deemed applicable to the Work. This includes language in the documents in the form of a recommendation or suggestion, which shall be deemed as mandatory.

1. NFPA
2. NYC CONSTRUCTION CODES (including Building Code BC, Mechanical Code MC and Fuel Gas Code FGC)
3. ASHRAE
4. SMACNA
5. ELECTRICAL IEEE STANDARDS
6. STATE DEC REGULATIONS
7. NYCDEP DEPARTMENT OF AIR RESOURCES CRITERIA
8. ASME
9. ANSI
10. NY INDUSTRIAL CODE RULE 4
11. ABMA
12. UL
13. LOCAL LAWS
14. NCPWB
15. FCI
16. EJMA
17. MSS
18. ABMA
19. IRI

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- 20.OTCR NYC Office of Technical Certification and Research
- 21.AABC
- 22.NEBB
- 23.ARI
- 24.AMCA
- 25.ADC
- 26.NEMA
- 27.NEC
- 28.ASTM
- 29.FCI
- 30.USGB LEED Green Building Rating System

All appliances regulated by the New York City Construction Codes shall be listed and labeled (reference MC 301.4, MC 301.6). Testing of material and equipment shall be in accordance with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department (MEA) before the effective date of the NYC Construction Codes may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.

1.05 ACCESSIBILITY

- A. Install access for servicing and maintenance. Coordinate the final location of concealed equipment and devices requiring access with final location of access panels and doors. Allow ample space for removal of all parts that require replacement or servicing.
- B. Extend all grease fittings to an accessible location.
- C. Door shall permit full access to the equipment.

1.06 ROUGHING-IN

- A. Verify final locations for roughing work with field measurements and with the requirements of the actual equipment being connected. Coordinate with General Construction drawings.

1.07 MECHANICAL INSTALLATIONS

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- A. Coordinate HVAC equipment and materials installation with other building components.
- B. Verify all dimensions by field measurements.
- C. Arrange for chases, slots, and openings in other building components to allow for HVAC installations.
- D. Coordinate the installation of required supporting devices and size of sleeves to be set in poured concrete and other structural components as they are constructed.
- E. Sequence, coordinate, and integrate installations of HVAC materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning and entrance prior to the close of the building.
- F. Coordinate the cutting and patching of building components to accommodate the installation of HVAC equipment and materials.
- G. Where mounting heights are not detailed or dimensioned, install HVAC services and overhead equipment to provide the maximum headroom possible.
- H. Install HVAC equipment to facilitate maintenance and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting and minimum of interference with other installations.
- I. Coordinate the installation of HVAC materials and equipment above ceilings with suspension system, light fixtures, and all other installations and accessories.
- J. Provide all rigging, disassembly and reassembly of equipment including the furnishing and installation of dunnage and all other required and necessary accessories.

1.08 COORDINATION DRAWINGS

- A. Provide coordination drawings. Coordination drawings shall be completed in accordance with the CPM Schedule so as not to delay the progress of the Project, for example, the installation of any floor slab in which the placing of mechanical equipment (sleeves, inserts, conduits, and all other accessory items) is involved.

1.09 CUTTING AND PATCHING

- A. Do not endanger or damage installed Work through procedures and processes of cutting and patching.

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- B. Arrange for repairs required to restore the work, because of damage caused as a result of HVAC installations.
- C. No additional compensation will be authorized for cutting and patching Work that is necessitated by defective or non-conforming installations.
- D. Perform cutting, fitting, and patching of HVAC equipment and materials required to:
 - 1. Remove and replace defective work.
 - 2. Remove and replace work not conforming to requirements of the Contract Documents.
 - 3. Remove samples of installed work as specified for testing.
 - 4. Install equipment and materials in existing structures.
 - 5. Cut, remove and legally dispose of selected HVAC equipment, components, and materials as indicated, including, but not limited to removal of HVAC piping, heating units and trim and other HVAC items made obsolete by the new work.
 - 6. Protect the structure, furnishings, finishes, and adjacent materials not indicated or scheduled to be removed.
- E. Locate identify, and protect HVAC services passing through remodeling or demolition area and serving other areas required to be maintained operational. When transit services must be interrupted, provide temporary services for the affected areas.

1.10 MATERIALS

- A. Refer to General Conditions for requirements. The following paragraph supplements this Section.

In addition, since manufacturing methods vary, reasonable minor variations are expected; however, performance and material requirements are the minimum standards acceptable.

1.11 EQUIPMENT NOISE AND VIBRATION

- A. It is contractor's responsibility to control equipment noise and vibration to comply with NYC Local Law 113 and NYC Mechanical Code Section MC 926:

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1. For equipment which has no sound power ratings scheduled on the plans, the contractor shall select equipment such that the fore-going noise criteria, local ordinance noise levels, and OSHA requirements are not exceeded. Selection procedure shall be in accordance with ASHRAE Fundamentals Handbook, Chapter 7, Sound and Vibration.
 2. Contractor shall perform testing/reporting to establish ambient baseline noise level (ambient, directional) of new outdoor equipment after completion of installation. Noise level testing, manufacturer's equipment operation performance documentation and proposed supplementary noise control measures shall be submitted to Consultant for review/approval.
- B. The vibration shall not be apparent in occupied areas of the building. Both the balancing of rotating machinery and the installation of vibration isolation at various locations are required. Provide as detailed in Specification Section 230549, Vibration Isolation.
- C. Obtain equipment that is quiet in operation as compared to other available equipment of its size, capacity, and type; install equipment so that a minimum amount of noise and/or vibration is transmitted to the building; and fabricate the duct system so that air noises generated in the system are held to an absolute minimum.
- D. Precautions deemed necessary to provide a quiet installation shall be done as part of the Work of this Project. After the system is in operation, make changes to equipment or Work installed so that the noise criteria defined in the New York City Construction Code (including Mechanical Code MC 926), New York City DEP Noise Code are adhered to:

<u>Location</u>	<u>Noise Criteria Standard (NC)</u>
Reading Areas	30-40
Conference Room	25-35
Private Offices	25-35
Lounge	35-40
Toilets	45-50

- E. Adjust all the equipment RPM, noise production and vibration in order to avoid any production of resonance in any system.

1.12 EQUIPMENT GUARDS

- A. Provide easily removable expanded metal guards for all belts, couplings, exposed fan inlets and outlets, and other moving parts of machinery. Provide tachometer openings in the guards at least 2" in diameter, for all belt-driven or

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variable speed machinery. Equipment guards shall comply with OSHA requirements.

- B. Guards shall be provided where appliances, equipment, fans or other components that require service are located within 10 feet of a roof edge or open side of a walking surface and such edge or open side is located more than 30 inches above the floor, roof or grade below. The guard shall extend not less than 30 inches beyond each end of such appliances, equipment, fan or component and the top of the guard shall be located not less than 42 inches above the elevated surface adjacent to the guard. The guard shall be constructed so as to prevent the passage of a 21-inch-diameter sphere and shall comply with the loading requirements for guards specified in the New York City Building Code. (Refer to BC 1012, FGC 306.6, MC 304.10).

1.13 ELECTRICAL CHANGES TO MECHANICAL EQUIPMENT

- A. If any changes made in equipment submitted are approved especially as to the sizes of the motors, contractor shall coordinate.

1.14 DELIVERY, STORAGE, AND HANDLING

- A. Handle equipment carefully to prevent damage, breaking, denting, and scoring. Do not install damaged units or components; replace with new.
- B. Store equipment in clean dry place. Protect from weather, dirt, fumes, water, construction debris, and physical damage.
- C. Comply with manufacturer's rigging and installation instructions for unloading equipment, and moving them to final location.

1.15 GUARANTEES, WARRANTIES, BONDS, AND MAINTENANCE CONTROL

- A. Refer to General Conditions for procedures and submittal requirements for warranties. Refer to individual equipment specifications for warranty requirements.
 - 1. Compile and assemble the warranties specified for HVAC work into a separated set of documents, tabulated and indexed for easy reference.
 - 2. Provide complete warranty information for each item to include product or equipment including duration of warranty or bond; and names, addresses, and telephone numbers and procedures for filing a claim and obtaining warranty services.

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3. Unless otherwise noted in the specific sections, warranties for the equipment, workmanship and materials shall be provided for the period of one year. Exceptions include, but are not limited to, the five (5) year warranty provided for the refrigeration compressors and rooftop heating furnace and cooling coils.
4. Manufacturers', not Contractors' warranties, shall be provided for all HVAC equipment and accessories.
5. All warranties are to start from the date of Substantial Completion.

1.16 OPERATIONS, TRAINING, AND MANUAL

- A. Refer to General Conditions for procedures and requirements for preparation and submittal of operation and maintenance manuals of each HVAC equipment. Refer to individual equipment specifications for maintenance manual additional requirements. In addition, include the following information:
 1. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of all replaceable parts.
 2. Manufacturer's printed operating procedures to include start-up, break-in, routine and normal operating instructions; regulation, control, stopping, shut-down, and emergency instructions; and summer and winter operating instructions.
 3. Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassemble; aligning and adjusting instructions.
 4. Servicing instructions and lubrication charts and schedules.
- B. Bind all the other Sections maintenance manuals in a single final Operating and Maintenance Manual with the requirements of General Conditions.
- B. Refer to General Conditions for procedures and requirements for training on each HVAC equipment. Refer to individual equipment specifications for the additional training requirements.

1.17 PAINTING

- A. Paints and coatings used in the interior of the building to

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cover insulation for identification purposes shall not:

1. Exceed the VOC content limits established in the Green Seal Standard GS-11 Paints, First Edition, May 20, 1993.
- B. Paints and coatings used in the interior of buildings to mark piping for identification purposes shall not:
 1. Exceed the VOC content limits established in the Green Seal Standard GS-11 Paints, First Edition, May 20, 1993.
 2. Exceed the VOC content limit of 250 g/l established in the Green Seal Standard GC-03, Anti-Corrosive Paints, Second Edition, January 7, 1997.
- C. All adhesives and sealants shall comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168; VOC limits shall comply with the limits indicated in Table 1 of LEED version 2.2, Indoor Environmental Quality Section, Credit EQ-4.1. Those limits correspond to an effective date of the SCAQMD Rule #1168 of July 1, 2005 and Rule Amendment date of January 7, 2005.
- D. Refer to Section 099000: Painting, for materials and method of application, and follow all the requirements specified in the Section.
- E. Painting Schedule
 1. No on-site painting is required on the following items unless specifically indicated otherwise:
 - a. Concealed metal and piping.
 - b. Chromium plated piping and chromium plated metal.
 - c. Stainless steel sheet metal.
 - d. Stainless steel piping.
 - e. Piping or ductwork to be insulated.
 - f. Insulation on piping or ductwork in unfinished spaces or concealed.
 - g. Insulated piping covered with stainless steel, aluminum, polyvinyl chloride, or all service jacketing, unless otherwise specified.
 - i. Mechanical equipment with a factory applied baked-on enamel finish, not specified to be insulated or provided with an enameled steel insulated jacket.

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- j. Insulated equipment noted on the Drawings to be covered with stainless steel or aluminum sheet metal jacketing or insulated cement finish.
 - k. Factory fabricated double wall insulated metal vents.
2. Paint the following:
- a. Un-insulated Black Steel Piping:
 - 1) Exposed in Finished Rooms or Finished Spaces: 1 coat of primer and 2 coats of latex semi-gloss enamel.
 - 2) Exposed in Unfinished Rooms, or Unfinished Spaces, or in Pipe Shafts: 1 coat of primer and 2 coats of finish.
 - 3) Exposed Exterior to a Building: 1 coat of primer and 2 coats of exterior acrylic latex semi-gloss enamel.
 - b. Un-insulated Galvanized, Cast Iron, Brass or Copper Piping:
 - 1) Exposed in Finished Rooms or Finished Spaces: 1 coat of primer and 2 coats of latex semi-gloss enamel.
 - 2) Exposed Exterior to a Building: 1 coat of primer and 2 coats of exterior acrylic latex semi-gloss enamel.
 - 3) Exposed in Unfinished Rooms or Unfinished Spaces: 1 coat of primer and 2 coats of finish.
 - c. Jacketing on Insulated Piping: exposed, in Finished Rooms or Finished Spaces: 2 coats of latex semi-gloss enamel. No primer required.
 - d. Jacketing on Insulated Equipment:
 - 1) For Below Ambient Temperatures, Exposed in Finished Rooms or Finished Spaces: 2 coats of latex semi-gloss enamel. No primer required.
 - 2) For Above Ambient Temperatures, Exposed in Finished Rooms or Finished Spaces: 1 coat of varnish size (FS TT-P-56B) primer and 2 coats of latex semi-gloss enamel.
 - e. Flexible Foamed Plastic Insulation on Piping, Ductwork and Equipment:

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- 1) Exposed in Finished Rooms or Finished Spaces: 2 coats of Armstrong Armaflex Finish. No primer required.
- 2) Exposed Exterior to a Building: 2 coats of Armstrong Armaflex Finish. No primer required.
- f. Piping in floor trenches after fabrication: primer and finish.
- g. Un-insulated Mechanical Equipment: furnished with a factory applied prime coat finish: 2 coats of acrylic latex semi-gloss enamel. No primer required.
- h. Vessels, Tanks, and Like Equipment Specified to be insulated: 1 coat of corrosion resistant paint, prior to the application of insulation.
- i. Un-insulated Exposed Iron and Steel Surfaces of Boilers, Including the Steel Casing, Buck Stays, Boiler Fronts, Castings, and the Exposed Surfaces of all Other Iron or Steel Installed in Conjunction with Boiler Work: 1 coat of primer and 2 coats of heat resistant enamel.
- j. Insulation Finish on Field Fabricated Boiler Smoke Breeching: 1 coat of varnish size (FS TT-P-56B) and 2 coats of latex semi-gloss enamel.
- k. Hangers, Supports, Restraints and Accessories:
 - 1) Exposed: Paint to match adjacent piping, pipe insulation or ductwork insulation.
 - 2) All black steel or iron pipe hangers, rods, inserts, brackets, restraints, and accessories for supporting piping systems and duct systems: 1 coat of primer and 2 coats of latex semi-gloss enamel. Paint black steel hanger rods, threaded on the job site, with a primer immediately after installation.
 - 3) Metal Fabrications in Finished Spaces: Paint over shop coat with 2 coats of alkyd gloss enamel.
- l. Sheet Metal Work:
 - 1) Exposed Black Iron, Galvanized Iron, and Aluminum, including Hangers for Insulated and Un-insulated Ductwork, in Finished Rooms, Finished Spaces or Exterior to a Building: 1 coat of primer and 2 coats of latex semi-gloss enamel.

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2) Jacketing on Exposed Insulated Ductwork in Finished Rooms and Finished Spaces: 2 coats of latex semi-gloss enamel. No primer required.

m. Un-insulated Exposed Valves, Flanges, Unions and Irregular Surfaces in Piping Systems Installed in Finished Rooms or Finished Spaces: 1 coat of primer and 1 coat of black heat resistant enamel.

F. Color Coding:

1. Apply finish paints of colors indicated opposite the various items listed below where such items are installed in Mechanical Equipment Rooms, Machine Rooms, Boiler Rooms, and Penthouse Mechanical Equipment Rooms:

Piping, Exposed - Bare and Insulated on Unfinished Spaces and Rooms:

Refrigerants	Green
Water - Boiler Make Up	Light Green
Water - Unsafe	Yellow

2. Piping Not Listed Above: Color code by classification as follows:

Dangerous Materials	Yellow or Orange
Safe Materials	Green
Valuable Materials	Purple

3. Ductwork: Grey.

4. Equipment - Bare and Insulated (Except Factory Painted): Gray.

1.18 ADJUSTING AND CLEANING

A. Refer to General Conditions for general requirements for final cleaning.

B. Alignment: Check alignment, and where necessary, realign equipment within recommended tolerances by the manufacturer and in presence of manufacturer's service representative and the Commissioner.

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1.19 TORCH BURNING OPERATION

- A. The storing and use of oxygen and combustible gases in conjunction with torch burning apparatus is subject to the Rules and Regulations of the Division of Fire Prevention of the Fire Department of the City of New York, latest Fire Prevention (F.P.) Directive. Fire watches shall be provided during all operations using torches for burning, cutting or welding.
- B. Contractor shall apply for and obtain permits for the use and storage of such equipment on school premises. The operator of such equipment shall have a certificate of fitness issued by the Fire Department.
- C. The cost of permits, certificates, fire watches, apparatus and other items required in the torch burning operation shall be borne by the Contractor at no additional cost to the City of New York.

1.20 SPECIAL INSPECTIONS/TESTS

- A. The following Special Inspections are required by the NYC Building Code for the HVAC Trade:

<u>Item</u>	<u>Code Section</u>
Mechanical Systems	BC 1704.15
Heating Systems	BC 1704.23
Chimneys	BC 1704.24

- B. The following Periodic Special Inspections are required by the NYC Building Code for HVAC Systems:

<u>Item</u>	<u>Code Section</u>
Fire Dampers	BC 109.3.4
Energy Code Compliance	BC 109.3.5
Through-penetration Firestop Systems	BC 1704.25

- C. Tests of Mechanical Systems shall be performed in accordance with the following Sections of the New York City Mechanical Code:

<u>Item</u>	<u>Code Section</u>
Chimneys	MC 810
Noise Control	MC 926
Boilers and Pressure Vessels	MC 1011
Refrigeration Systems	MC 1108
Hydronic Piping Systems	MC 1208

- D. Special and periodic inspections shall be performed by Special Inspectors hired by City of New York. All tests shall

be witnessed by Special Inspectors.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine areas and conditions under which equipment is to be installed. Do not proceed with work until conditions are suitable.

3.02 INSTALLATION

- A. Install equipment in accordance with manufacturer's installation instructions. Install units plumb and level, firmly anchored in locations indicated, and maintain manufacturer's recommended clearances.
- B. Support: Install equipment on 4" high concrete pad when installed on floor, with vibration isolators and restraints as required.
- C. Accessories: Install equipment accessories not installed at factory and shown on the Drawings.
- D. Connections: Connect all equipment and accessories as recommended by manufacturer for a complete installation.
- E. Contractor shall not leave sharp exposed metal edges (bottom of threaded rods, mechanical equipment supports, etc.) that could otherwise present safety hazards to the building's occupants/work staff.
- F. **Access and service space shall be per MC 306.1 - Clearances for maintenance and replacement:** Clearances around appliances to elements of permanent construction, including other installed equipment and appliances, shall be sufficient to allow inspection, service, repair or replacement without removing such elements of permanent construction or disabling the function of a required fire-resistance-rated assembly.

3.03 ADJUSTING AND CLEANING

- A. Cleaning: Clean factory-finished surfaces. Repair any marred or scratched surfaces with manufacturer's touch-up paint.

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3.04 SPARE PARTS

- A. Provide a set of spare parts that may be normally required, such as belts, filters, etc. that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

3.05 TESTING

- A. The Contractor shall furnish energy, fuel, oil, water, air, light and electrical instruments as required for all testing. Reference Section 230593, Cleaning and Testing.

END OF SECTION

SECTION 230503
HVAC PIPING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide pipes, pipe fittings, pipe specialties, and pipe supports as shown on the Drawings, and as needed for a complete and proper installation. Product specific requirements are contained herein; Section 230501, Basic HVAC Requirements, shall be referred to for general requirements.

1.02 DESIGN AND PERFORMANCE REQUIREMENTS

A. Heating Hot Water Piping

Operating Pressure	125 psig
Operating Temperature	150° - 250° F
Design Code (ANSI)	B31.9

B. Refrigerant Piping

Operating Pressure	150 psig
Operating Temperature	40° - 120° F
Design Code (ANSI)	B31.5

1.03 RELATED SECTIONS

- A. Division 23 Sections

1.04 SUPPLEMENTAL SUBMITTALS

- A. Shop Drawings: Submit schedule showing pipe or tube weight, fitting and joint type for each piping system; size, location and feature for each piping specialty, hanger and support.
- B. Welding Certifications: Submit reports as required for piping work.
- C. Brazing Certifications: Submit reports as required for piping work.

1.05 SUPPLEMENTAL QUALITY ASSURANCE

A. Codes and Standards

1. Welding: Qualify welding procedures, welders and operators in accordance with ASME B31.1, or ASME B31.9, as applicable, for shop and project site

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welding of piping work and ASME Boiler and Pressure Vessel Code, Section IX, Part QW Welding.

2. Certify welding of piping work using Standard Procedure Specifications by, and welders tested under supervision of, National Certified Pipe Welding Bureau (NCPWB).
3. Brazing: Certify brazing procedures, brazers, and operations in accordance with ASME Boiler and Pressure Vessel Code, Section IX, Part QB Brazing for shop and job-site brazing of piping work.
4. Fluid Control Institute (FCI) Compliance: Test and rate "Y" type strainers in accordance with FCI 73-1: Pressure Rating Standard for "Y" Type Strainers. Test and rate other type strainers in accordance with FCI 78-1: Pressure Rating Standard for Pipeline Strainers Other than "Y" Type.
5. Manufacturers Standardization Society of The Valve and Fittings Industry (MSS) Compliance: Comply with:
MSS SP-58 Pipe Hangers and Supports - Materials, Design and Manufacture.
MSS SP-69 Pipe Hangers and Supports - Selection and Application.
MSS SP-89 Pipe Hangers and Supports - Fabrication and Installation Practices.

Piping shall be supported at distances not exceeding the spacing specified in MC Table 305.4 or in accordance with the above MSS standards.

6. New York City Construction Code: Comply with the New York City Building Code, Mechanical Code, Fuel Gas Code, Plumbing Code and Fire Code.
7. Testing of material and equipment shall be in accordance with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department (MEA) before the effective date of the NYC Construction Codes

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may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.

PART 2 - PRODUCTS

2.01 PIPES

A. Pipe used shall be free from scale or rust. Each length of pipe shall be properly marked at the mill for proper identification with name or symbol of manufacturer. Dimensions for steel pipe shall be in accordance with the ANSI B36.10.

B. Steel Pipe

1. Black or Galvanized; Standard Weight: Schedule 40
 - a. Steel Pipe for Threading: Type F, E or S, ASTM A53; ASTM A135 or A106.
 - b. Bending, Coiling, and Flanging: ASTM A53, Grade A, Type E or S, ASTM A135 or ASTM A106.
 - c. Grooved End Type: Schedule 40, ASTM A53 Grade A, Type F for sizes 3/4" to 1-1/2", and ASTM A53 Grade B Type E or ASTM A53 Grade B Type S for sizes 2" to 24"; or ASTM A135 or ASTM A106.

2. Steel pipe shall be manufactured by:

Koppel Steel Corp.
North Star Steel Co.
U.S. Steel Co.
Or approved equal.

D. Copper Tubing

1. Hard-Drawn Temper, Water Tube Type L: ASTM B88. Refrigerant Piping: ACR Tube: ASTM B280. Other refrigerant pipe and tubing options are as defined in MC 1107.4

2. Copper tubing shall be manufactured by:

Mueller Industries
NIBCO Inc.
Phelps-Dodge Copper Products Corp.
Or approved equal.

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2.02 FITTINGS

A. Steel, Malleable/Cast Iron

1. Steel Fittings, except couplings and unions, 2-1/2" and less: Threaded pattern, standard weight, black cast iron.
2. Flanges, Welding Neck Type, Same Pressure Rating as Adjoining Pipe: ANSI/ASME B16.5. Welding flanges shall be socket type.
3. Weld Fittings, Carbon Steel: Butt Welding Type: ANSI/ASME B16.9: Allied Piping Products Co., Inc.'s Branchlets, Type 1 or 2 or Bonney Forge Corp.'s Weldolets; Socket Welding Type: ANSI/ASME B16.11 Allied Piping Products Co., Inc.'s Branchlets, Type 1 or 2 or Bonney Forge Corp.'s Thredolets or Sockolets.
4. Grooved End Type: Steel: Ductile iron, ASTM A536 Grade 65-45-12; Malleable Iron: ASTM A47.
5. Malleable Iron, Steam Pattern Threaded: ANSI/ASME B16.3 for 150 lb Class and 300 lb Class.
6. Cast Iron, Steam Pattern Threaded: ANSI/ASME B16.4, Flanged Fittings and Threaded Flanges: ANSI/ASME B16.1 for standard weight pipe: Class 125 and for extra heavy weight pipe: Class 250.
8. Steel and malleable/cast iron pipe fittings shall be manufactured by:

Tube-Line.

Victaulic Co. of America.

TYCO Grinnell Mechanical Products.

Or approved equal.

B. Brass

1. Malleable brass, threaded pattern; flanges, brass for use in brass pipe or copper tubing systems: Flanges shall conform to the Standards for fittings used in the systems. Brazing Flanges, With or Without Pre-inserted Rings of Brazing Alloy: ASME B16.15, with hubs modified for brazing ends. Brass fittings shall conform to ASTM F 1974 per MC Table 1202.5.
2. Brass Fitting shall be manufactured by:

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Mueller Industries
NIBCO Inc.
Smith-Cooper International.
Or approved equal.

C. Unions 3" Size and Under: Steel: malleable iron, 300 lb class, with brass to iron or brass to brass seats and bronze to bronze, bronze to iron, or brass to iron ground joint, except as otherwise specified. The pressure rating shall be indicated on the union.

1. Unions for Use in Brass Pipe or Copper Tubing Systems, 2" and under: Cast bronze, 150 lb Class, with bronze to bronze seats; with screw, brazing or solder ends, or with adapters as required.

2. Union shall be manufactured by:

NIBCO Inc.
SSmith-Cooper International
Weldbend Corporation.
Or approved equal.

D. Fittings for Type "L" copper tubing shall be wrought copper solder joint fittings suitable for brazing and shall be in accordance with ANSI B16.22. Type "L" fittings shall have a minimum working water pressure of 150 p.s.i. Alternately, hydronic fittings for hot water piping and chilled water piping may be press fittings by Viega ProPress (or approved equal) up to and including 4 inches in diameter.

a. Flux for brazing shall be equal to "Handy Flux" and shall comply with Navy Dept. Spec. 51F 4a.

b. The silver brazing alloy for brazed joints shall be similar to Handy & Harmon Sil-Fos brazing alloy having a silver content of not less than 15% and a flow point of 1300° Fahrenheit.

1. Alternately, fittings for Type "L" copper tubing may be cast bronze threaded fittings, Class 125 working steam pressure, conforming to ASTM B62 and ASME B16.24.

2. Type "L" fittings shall be manufactured by:

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Elkhart Products Corp.
Mueller Industries
NIBCO Inc.
Or approved equal.

- E. Mechanically formed tee-branch outlets (refer to MC 1203.3.8) may be used on aboveground copper tubing. The mechanically formed outlet shall be by T-Drill Industries, Inc. or approved equal. All joints formed in this manner shall be brazed in compliance with MC 1203.3.8.2 and manufacturer's recommendations. Soft soldered joints shall not be permitted.
- F. Couplings: Same material and pressure rating as adjoining pipe, conforming to standards for fittings in such pipe. Use taper tapped threaded type in screwed pipe systems operating in excess of 15 psig.
- G. Grooved Joints - for Steel Piping: Rolled or cut grooves, Pipe: Carbon Steel, ASTM A-53, or ASTM A-106, EPDM gaskets; Housing: Ductile Iron or Malleable Iron. System shall be designed for flexible or rigid installation. Welded flanges shall be used at equipment connections, and for maintenance removal sections. Manufacturers: Victaulic, Anvil International Inc/Gruvlok 7400 Rigidlite, or TYCO Grinnell Mechanical Products.
- H. Nipples: same material and strength as adjoining pipe, except nipples having a length of less than 1" between threads shall be extra heavy. Manufacturer: Allied Piping Products, Babcock & Wilcox, Crane Co., Tube Turns and Smith-Cooper International.

2.03 FLEXIBLE CONNECTIONS

- A. Corrugated inner tube and outer shield of wire braid: Stainless steel. Maximum working pressure at room temperature: 850° F and pressure safety factor of 4:1
- B. Corrugated inner tube and outer shield of wire braid: Bronze. Maximum working pressure at room temperature up to 150° F. Manufacturer: Metraflex Co. or Flex-Hose Co., Inc.
- C. Flexible Hose/Connections, stainless steel shall be manufactured by:

Allied Metal Hose Inc.
Mason Industries (Type BSS)
Metraflex Co.

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Or approved equal.

2.04 GALVANIZING

- A. Galvanizing Pipe and Fittings: hot dip process, inside and out in accordance with ASTM or other nationally recognized specifications to which pipe and fittings conform. Galvanize before threading.

2.05 JOINING AND SEALANT MATERIALS

- A. Solder: solid wire type conforming to type 2: 95-5
- B. Gasket Material
1. For Use with Cold Water: 1/16" thick rubber.
 2. For Use with Hot Water: Waterproofed non-asbestos mineral, or ceramic fiber, or spirally wound stainless steel V-shaped strip with non-asbestos filler and an outer steel compression ring, designed for the temperatures and pressures of the piping systems.
- C. Bolts and Nuts: heat treated carbon steel, ASTM A183 minimum tensile 110,000 psi.
- D. Thread sealant shall be a slow-drying formula that shall not harden or crack in the pipe joint. Sealant shall meet Fed. Spec. TT-S-1732. Sealant shall seal all types of pipe threads.
1. Thread sealant to be used on fuel oil and diesel piping shall be RectorSeal Corp No. 5, Oatey Great Blue pipe joint compound, or approved equal. Sealant shall be a non-toxic, soft setting, slow drying thread sealant made from inert fillers. The joint compound shall not contain any Teflon.
 - a. Teflon tapes shall not be used in fuel oil and diesel lines.

2.06 PIPING SPECIALTIES

- A. Provide factory-fabricated piping specialties recommended by manufacturer for use in service indicated.
- B. Pipe Escutcheons
1. Provide pipe escutcheons as specified herein with inside diameter closely fitting pipe outside diameter or outside of pipe insulation where pipe

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is insulated. Select outside diameter of escutcheon to completely cover pipe penetration hole in floors, walls, or ceilings; and pipe sleeve extension, if any. Provide pipe escutcheons with nickel or chrome finish for occupied areas, prime paint finish for unoccupied areas.

- a. Pipe Escutcheons for Moist Areas: For waterproof floors and areas, where water and condensation can be expected to accumulate, provide cast brass or sheet brass escutcheons, solid or split hinged.
- b. Pipe Escutcheons for Dry Areas: Provide sheet steel escutcheons, solid or split hinged.

2. Manufacturers:

Chicago Specialty Mfg. Co.
Producers Specialty & Mfg. Corp.
Sanitary-Dash Mfg. Co.
Or approved equal.

C. Strainers: Low Pressure Y-Type Pipeline Strainers:

1. Provide strainers full line size of connecting piping with ends matching piping system materials. Select strainers for 125 psi working pressure with perforated stainless-steel basket with 50 percent free area. Perforation or mesh size shall depend on strainer size and/or material being strained.
 - a. Threaded Ends, 2-1/2" and Smaller: Cast-iron body, screwed screen retainer with centered blow down fitted with pipe plug.
 - b. Flanged Ends, 3" and Larger: Cast-iron body, bolted screen retainer with off-center blow down fitted with pipe plug.
 - c. Butt Welded Ends, 3" and Larger: Schedule 40 cast carbon steel body, bolted screen retainer with off-center blow down fitted with pipe plug.
 - d. Grooved Ends, 2-1/2" and Larger: Tee or Wye Type, ductile-iron or malleable-iron body and access end cap, access coupling with EDPM gasket.

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2. Manufacturers:

Armstrong Machine Works.
Victaulic Co. of America
TYCO Grinnell Mechanical Products
Or approved equal.

D. Dielectric Unions:

1. Provide products which effectively isolate ferrous from non-ferrous piping (electrical conductance), prevent galvanic action, and stop corrosion. Per MC 1203.1.1 and 1303.1.1 joints between different metallic piping materials shall be made with approved dielectric fittings or brass converter fittings.

2. Manufacturers:

B&K Industries, Inc.
Capitol Mfg. Co.; Div. of Harsco Corp.
Eclipse, Inc.
Or approved equal.

E. Pipe Sleeves: Provide pipe sleeves of one of the following:

1. Sheet-Metal: Fabricate from galvanized sheet metal; round tube closed with snaplock joint, welded spiral seams, or welded longitudinal joint. Fabricate from the following gauges: 3" and smaller, 20 gage; 4" to 6", 16 gage; over 6", 14 gage.
2. Steel-Pipe: Fabricate from Schedule 40 galvanized steel pipe; remove burrs.
3. Iron-Pipe: Fabricate from cast-iron or ductile-iron pipe; remove burrs.
4. Plastic-Pipe: Fabricate from Schedule 80 PVC plastic pipe; remove burrs.

F. Mechanical Sleeve Seals

1. Modular mechanical type consisting of interlocking synthetic rubber links shaped to continuously fill annular space between pipe and sleeve, connected with bolts and pressure plates which cause rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation

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2. Provide mechanical sleeve seals for sleeves located in foundation walls below grade, or in exterior walls.
3. Manufacturers:

Thunderline Corp.;
Metraflex Co;
MetraSeal.
Or approved equal.

2.07 EXPANSION COMPENSATION

Not Used.

2.08 SLIP JOINTS

Not Used.

2.09 PIPE ALIGNMENT GUIDES

Not Used.

2.10 HANGERS AND SUPPORTS

A. General

1. Insulated Piping: Each pipe hanger supporting insulated piping shall be provided with a pipe covering protection shield.
2. Hangers for pipes smaller than 5" shall be forged or malleable iron ring type or steel clevis type supported by a solid steel rod.
3. Sockets used on upper ends of rods at beam clamps and on lower ends of rods for single hangers shall be malleable or forged steel with standard machine threads.
4. Supports for vertical piping shall be double bolt riser clamps, Grinnell MSS SP 69 Type 8 with each end having equal bearing on the building structure located as hereinafter specified. If piping is insulated, riser clamp shall be placed under insulation.
5. Trapeze type hangers shall be made of 2"x2"x1/4" carbon steel angle iron with drilled holes and 1/2" hanger rods. In lieu of an angle iron, a strut

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assembly may also be used for the trapeze style hanger supports.

B. Pipe hangers shall be manufactured by:

Anvil International Inc. (Formerly Grinnell)
Cooper B-Line, Inc.
Grabler Mfg. Co.
Or approved equal.

2.11 INSERTS AND EXPANSION BOLTS

A. Expansion bolts for use in new and existing reinforced concrete slabs: shall be wedge-type zinc-coated or stainless steel fastener with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used: Powers Fasteners, "Power Stud"; ITW Ramset/Red Head "Trubolt"; Hilti, Inc "Kwik Bolt" or approved equal.

2.12 SADDLES AND SHIELDS

A. Except as otherwise indicated on the Drawings, provide saddles or shields under piping hangers and supports, factory-fabricated, for all insulated piping. Size saddles and shields for exact fit to mate with pipe insulation.

1. Protection Saddles: MSS Type 39; fill interior voids with segments of insulation matching adjoining insulation.
2. Protection Shields: MSS Type 40; of length recommended by the manufacturer to prevent crushing of insulation.
3. Thermal Hanger Shields: Constructed of 360° insert of high density, 100 psi, waterproofed calcium silicate, encased in 360° sheet metal shield. Provide assembly of same thickness as adjoining insulation.

B. Manufacturers:

Elcen Metal Products Co.
Pipe Shields, Inc.
Value Engineered Products, Inc.
Or approved equal.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine areas and conditions under which all products are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to the City of New York.

3.02 PREPARATION

- A. Proceed with installation of hangers, supports and anchors only after required building structural work has been completed. Correct inadequacies including (but not limited to) proper placement of inserts, anchors and other building structural attachments.

3.03 PIPE INSTALLATION

- A. Install pipes in accordance with recognized industry practices, which will achieve permanently-leakproof piping systems, capable of performing each indicated service without piping failure. Align piping accurately at connections, within 1/16" misalignment tolerance. Comply with ANSI B31 Code for Pressure Piping.
- B. Locate piping runs, except as otherwise indicated, vertically and horizontally (pitched to drain) and avoid diagonal runs wherever possible. Orient horizontal runs parallel with walls and column lines. Locate runs as shown or described by diagrams, details and notations. Run piping in shortest route which does not obstruct usable space or block access for servicing building and its equipment. Hold piping close to walls, overhead construction, columns and other structural and permanent-enclosure elements of building; limit clearance to 1/2" where furring is shown for enclosure or concealment of piping, but allow for insulation thickness, if any. Where possible, locate insulated piping for 1" clearance outside insulation.
- C. Do not run piping through transformer vaults and other electrical or electronic equipment spaces and enclosures unless unavoidable. Install drip pan under piping that must be run through electrical spaces. Do not run piping in stairwells or elevator equipment rooms except for systems serving those spaces.
- D. In the outlet from each cooling coil condensate drain pan, provide a tee with a brass plug at one end to facilitate cleaning of drain.

3.04 INSTALLATION OF PIPE SYSTEM JOINTS

- A. Provide joint of type indicated in each piping system.
- B. Thread pipe in accordance with ASME B1.20.1; cut threads full and clean using sharp dies. Ream threaded ends to remove burrs and restore full inside diameter. Apply pipe joint compound, or pipe joint tape (Teflon*) where recommended by pipe/fitting manufacturer, on male threads at each joint and tighten joint to leave not more than three threads exposed.
- C. Weld pipe joints in accordance with recognized industry practice and as follows:
 - 1. Weld pipe joints only when ambient temperature is above 0° F where possible.
 - 2. Bevel pipe ends at a 37.5° angle where possible, smooth rough cuts, and clean to remove slag, metal particles and dirt.
 - 3. Use pipe clamps or tack-weld joints with 1" long welds, 4 welds for pipe sizes to 10", 8 welds for pipe sizes 12" to 20".
 - 4. Build up welds with stringer-bead pass, followed by hot pass, followed by cover or filler pass. Eliminate valleys at center and edges of each weld. Weld by procedures which will ensure elimination of unsound or unfused metal, cracks, oxidation, blow-holes and non-metallic inclusions.
 - 5. Do not weld-out piping system imperfections by tack-welding procedures; refabricate to comply with requirements.
- D. Brazed Joints: Joints in refrigerant piping shall be brazed. The outside of the copper tube and the inside of the fitting where solder will be applied, shall be cleaned and burnished with fine crocus cloth until all dirt and oxide is removed. A light coat of non-corrosive brazing flux shall be applied to both pipe and fittings (Acid flux shall not be used). Joint shall be uniformly heated to proper brazing temperature and the brazing material shall be fed to the joint until a uniform line of brazing material appears around the pipe at the end of the fitting. Brazing shall be done only by mechanics that are qualified for brazing refrigerant piping.
- E. Fittings for copper tubing for refrigerant use shall be wrought copper with solder type ends. Forged brass

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fittings are also acceptable for this purpose. Fittings shall be suitable for working water pressure up to 250 psi.

- F. Solder copper tube-and-fitting joints in accordance with recognized industry practice. Cut tube ends squarely, ream to full inside diameter, and clean outside of tube ends and inside of fittings. Apply solder flux to joint areas of both tubes and fittings. Insert tube full depth into fitting, and solder in manner that will draw solder full depth and circumference of joint. Wipe excess solder from joint before it hardens.
- G. The use of mechanical formed outlets on copper tubing instead of soldered joints is acceptable. The maximum diameter of branches shall be 2-1/8". Use appropriate tool designed for mechanical formed outlets on copper tubes. All mechanical formed tee fittings shall be brazed in accordance with the Copper Development Associations Copper Tube Handbook Using BCuP series filler metal. All mechanical formed branch collars shall be listed by UPC, and Underwriters Laboratory. They shall comply with ASME Code for pressure piping ANSI B31.5c.
- H. Offsets in piping shall be accomplished by means of standard fittings.
- I. Eccentric Fittings: reductions in sizes of hot water mains shall be made with eccentric fittings.
- J. Reducing Fittings: except for welded piping, no fittings shall be taped for drip except in boss provided for that purpose. Reducing fittings shall be used where drips are required.
- K. Unions shall be used in piping only adjacent to units of equipment such as pumps, compressors, heating coils, cooling coils and all other items and accessories, or in other locations where specified, where shown on the Drawings, or where written permission is granted prior to installation.
- L. Mechanical Couplings Type Fittings: The use of mechanical coupling type fittings on hot and cold water piping in lieu of threaded or flanged fittings is acceptable in sizes 2" to 8" inclusive. The mechanical couplings shall be self-centering and shall engage and lock the grooved pipe and/or fittings in a positive couple while allowing for some degree of angular pipe deflection, contraction and expansion. Entire coupling installation including pipe grooving shall be performed in accordance with the manufacturer's instructions. Victaulic couplings

together with their respective grooved end pipe fittings are acceptable.

3.05 INSTALLATION OF FLEXIBLE CONNECTIONS

- A. Install stainless steel type on the water line at the circulating pumps; and bronze type on the refrigerant line. Pipe system must be properly supported so as not to impose weight on the connectors which would compress the hose and relax the braid tension. Avoid torque. Do not twist the hose assembly during installation when aligning bolt holes in a flange or in mating-up the pipe threads.

3.06 PIPING TESTS

- A. For operational and hydrostatic tests, refer to Section 230593: Cleaning and Testing.
- B. Where piping installed under this project is connected to any existing system, such installed piping shall be isolated from the existing system during the performance of the required tests.

3.07 INSTALLATION OF PIPING SPECIALTIES

- A. Pipe Escutcheons: Install pipe escutcheons on each pipe penetration through floors, walls, partitions, and ceilings where penetration is exposed to view; and on exterior of building. Secure escutcheon to pipe or insulation so escutcheon covers penetration hole, and is flush with adjoining surface.

B. Strainers

1. Locate strainers in supply line ahead of the following equipment, and elsewhere as indicated, if integral strainer is not included in equipment:

Pumps

- C. Dielectric Unions: install at each piping joint between ferrous and non-ferrous piping. Comply with manufacturer's installation instructions.

D. Pipe Sleeves

1. Install pipe sleeves where piping passes through walls, floors, ceilings, and roofs. Do not install sleeves through structural members of work, except

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as detailed on the Drawings or as reviewed by the Commissioner. Install sleeves accurately centered on pipe runs. Size sleeves so that piping and insulation (if any) will have free movement in sleeve, including allowance for thermal expansion; but not less than 2 pipe sizes larger than piping run. Where insulation includes vapor-barrier jacket, provide sleeve with sufficient clearance for installation. Install length of sleeve equal to thickness of construction penetrated, and finish flush to surface; except floor sleeves. Extend floor sleeves 1/4" above level floor finish, and 3/4" above floor finish sloped to drain.

- a. Install sheet-metal sleeves at interior partitions and ceilings other than suspended ceilings.
 - b. Install iron-pipe sleeves at exterior penetrations, both above and below grade.
 - c. Install steel-pipe or plastic-pipe sleeves where indicated on the Drawings.
- E. Mechanical Sleeve Seals: Mechanical modular seals may be used in lieu of packing and sealant for sleeves and core drilled holes. Loosely assemble rubber links around pipe with bolts and pressure plates located under each bolt head and nut. Push into sleeve and center. Tighten bolts until links have expanded to form watertight seal. Use fire protective seals where required. Size annular space as required for seal installation.
- F. Fire Barrier Penetration Seals: refer to Section 078400: Firestopping.
- G. Drip Pans: locate drip pans under piping passing over or within 3 feet of electrical equipment, and elsewhere as indicated. Hang from structure with rods and building attachments, weld rods to side of drip pan. Brace to prevent sagging or swaying. Connect 1" drain line to drain connection, and run to nearest plumbing drain or elsewhere as indicated on Drawings.

3.08 INSTALLATION OF EXPANSION COMPENSATION

Not Used.

3.09 MISCELLANEOUS CONNECTIONS

Not Used

3.10 INSTALLATION OF SUPPORTS AND ANCHORS

- A. Provide all necessary pipe hanger material needed to safely and securely support or hang all piping. Pipe hanger loads shall be determined by accurate weight balance calculations to prevent transferring loads and forces to any equipment and terminal connections.
- B. Install building attachments at required locations within concrete or on structural steel for proper piping support. Space attachments within maximum piping span length indicated in MSS SP-69 and MSS SP-89.
- C. Install hangers, supports, clamps and attachments to support piping properly from building structure. Arrange for grouping of parallel runs of horizontal piping to be supported together on trapeze type hangers where possible. Install supports with maximum spacings complying with MSS SP-69 and MSS SP-89. Where piping of various sizes is to be supported together by trapeze hangers, space hangers for smallest pipe size or install intermediate supports for smaller diameter pipe. Do not use wire or perforated metal to support piping, and do not support piping from other piping.
- D. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers and all other items and accessories. Except as otherwise indicated for exposed continuous pipe runs, install hangers and supports of same type and style as installed for adjacent similar piping.
- E. Prevent electrolysis in support of copper tubing by use of hangers and supports which are copper plated or by other recognized industry methods.
- F. Provisions for Movement
 - 1. Install hangers and supports to allow controlled movement of piping systems.
 - 2. Load Distribution: Install hangers and supports so that piping live and dead loading and stresses from movement will not be transmitted to connected equipment.
 - 3. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and so that maximum pipe deflections allowed by ANSI B31 Pressure Piping Codes are not exceeded.

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- G. Insulated Piping: Comply with the following installation requirements.
1. Clamps: Attach clamps, including spacers (if any), to piping with clamps projecting through insulation; do not exceed pipe stresses allowed by ANSI B31.
 2. Shields: Where low-compressive-strength insulation or vapor barriers are indicated on chilled water piping, install coated protective shields.
 3. Saddles: Where insulation without vapor barrier is indicated, install protection saddles.
- H. Install anchors at proper locations to prevent stresses from exceeding those permitted by ANSI B31 and to prevent transfer of loading and stresses to connected equipment.
- I. Fabricate and install anchor by welding steel shapes plates and bars to piping and to structure. Comply with AWS standards.
- J. The refrigerant piping above the roof slab shall be supported in a galvanized sheet steel enclosure. The cover of the enclosure shall be held in place with stainless steel sheet metal screws on 18" centers. The base of the enclosure shall be secured to the angle uprights with 1/4" bolts, washers and nuts.
- K. Hangers and supports for refrigerant piping shall be copper plated, malleable iron or carbon steel.

3.11 CLEANING, FLUSHING, INSPECTING

- A. Clean exterior surfaces of superfluous materials, and prepare for application of specified coatings (if any). Flush out piping systems with clean water before proceeding with required tests. Inspect each run of each system for completion of joints, supports and accessory items. Inspect pressure piping in accordance with procedures of ASME B31.
- B. Hanger Adjustments: adjust hangers so as to distribute loads equally on attachments.
- C. Support Adjustment: provide grout under supports so as to bring piping and equipment to proper level and elevations.

3.12 PIPE AND FITTING SCHEDULE

- A. Cold Water Above Ground (CW) 125 psig and Less:
 - 1. Type "L" Copper tubing with soldered fittings.
- B. Hot Water Supply and Return (HWS and HWR) 125 psig and less:
 - 1. 2" and Less: Type L hard temper copper tubing with bronze or copper solder fittings. Mechanically formed tee fittings may be used in lieu of solder-joint tee fittings.
 - 2. 2-1/2" and 3": Standard Weight Black Steel pipe with Screwed End Standard Weight Cast-Iron fittings
3" and Up: Standard Weight Black Steel pipe, with Weld End Standard Weight Steel fittings or Grooved End with Grooved End fittings.
- C. Refrigerants (RS, RL, RG and RD) 350 psig and Less: Type L hard temper copper tubing with brazed fittings.
- D. Condensate Drain Piping: all drip piping from air handling units; all drains and overflow lines from heating and air conditioning systems, and all condensate piping systems connected to drain pans - All Sizes: Standard weight (Schedule 40) galvanized steel pipe; minimum size 1" or Type L hard temper copper tubing and fittings.

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SECTION 230523
VALVES (HVAC)

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide labor, materials, equipment, accessories, services and test necessary to complete and make ready for operation, all valves shown on the Drawings and hereinafter specified in other Division-23 Sections (HVAC).

1.02 RELATED SECTIONS

- A. Division 23 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Product Data: Submit manufacturer's product data including valve design, pressure and temperature classification, end connection details, seating materials, trim material and arrangement, required clearances and installation instructions.
- B. Shop Drawings: Submit valve schedule showing manufacturer's figure number, location, and valve features for each required valve. Include list indicating valve and its application in the schedule.
- C. Maintenance data.
- D. Maintenance Material:
1. Deliver extra wrenches to the Commissioner and attach receipt to final payment.
 2. Padlock and two (2) keys for each lock.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

- A. Codes and Standards
1. MSS Compliance: Mark valves in accordance with MSS-25: Standard Marking System for valves, fittings, flanges and unions and all other applicable MSS Standards.
 2. ANSI Compliance: For face-to-face and end-to-end dimensions.
 3. UL and FM Compliance: Provide valves used in fire protection piping which are UL-listed and FM approved.
 4. ASME Compliance: Comply with ASME B31.9 for building services piping and ASME B31.1 for power piping.

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5. Testing of material and equipment shall be in accordance with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department (MEA) before the effective date of the NYC Construction Codes may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.

B. Valves of one type throughout the Project shall be of the same manufacturer. Valve parts of same manufacturer, size and type shall be interchangeable.

PART 2 - PRODUCTS

2.01 GENERAL

A. Provide all the valves shown on the Drawings (HVAC Work) and necessary for the control and easy maintenance of all piping and equipment. Valves shall be first quality, have proper clearance, followers in the packing glands, and shall seal tight at the specified test pressure. Each valve shall have the maker's name or brand, the figure or list number and the guaranteed working pressure cast on the body and cast or stamped on the bonnet.

1. Working Pressure: Valves shall be designed for steam working pressure of not less than 125 psi, for water of not less than 200 psi and 350 psig hydrostatic tests.

2. Wheels: Shut-off valves shall have self-cooling type metal hand wheels except where specified otherwise. For valves other than outside screw and yoke type gate valves, the valve stem shall be extended through the wheel and be provided with hexagon nuts to secure the wheel in place.

B. All valves shall be designed for packing under pressure with valve open or closed.

C. Valves 2" and under shall be all bronze, unless otherwise specified or shown on the Drawings. Valves

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2 1/2" and larger shall be iron body bronze mounted (IBBM), iron body brass mounted, or iron body with outside screw and yoke (OS&Y) unless space conditions prevent the use of OS&Y valves, in which case non-rising stem valves may be used.

- D. Solder end valves shall be suitable for brazing.
- E. All valves up to 2" in diameter shall have threaded or solder ends, 2 1/2" in diameter and over shall have flanged, or butt-welded unless otherwise specified or shown on the Drawings.

2.02 MATERIALS

A. Body

- 1. Cast Iron: ASTM A126, Class B, higher strength cast iron.
- 2. Bronze: For use up to 150 psig WSP, ASTM B62 and over 150 psig to 300 psig WSP, ASTM B61.
- 3. Cast Steel: ASTM A216 Grade WCB.
- 4. Forged Steel: ASTM A105.

B. Stem

- 1. Cast Manganese Bronze: ASTM B584.
- 2. Cast Silicon Brass: ASTM B584.
- 3. Rolled Silicon Brass: ASTM B98 Alloy D.
- 4. Rolled Aluminum Bronze: ASTM B150 Alloy 1.
- 5. Rolled Manganese Bronze: ASTM B138 Alloy A (half hard).
- 6. Naval Brass: ASTM B21 Alloy A or Alloy C (hard).
- 7. Carbon Steel: As specified for particular type of valve.
- 8. Stainless Steel: As specified for particular type of valve.

C. Trim: As specified for particular type of valve.

2.03 GATE VALVES

- A. All gate valves shall be of the solid wedge disk type.
- B. Gauge Valves: Use gate valves, cocks are not acceptable.
- C. Hose gate valves shall be 125 psi, 3/4", standard weight bronze with cap.

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D. Manufacturers

Crane Co.
Hammond Valve Corp.
NIBCO, Inc.
Or approved equal.

2.04 GLOBE VALVES

A. Except valves in pneumatic and automatic temperature control piping and pneumatic and automatic valves, no globe valve of size larger than 1/2" shall be used, unless otherwise specified or shown on the Drawings. Where globe valves are approved, they shall be of the same grade called for other valves.

2.05 CHECK VALVES

A. Check valves shall be of heavy pattern, straightway, re-grinding type with renewable seat, ground seat and approved type renewable discs. The discs for check valves, of size larger than 2" may be bronze faced.

B. Swing Check Valves: horizontal swing, Y-pattern, cast-bronze body and cap, bronze disc with rubber seat or composition seat, threaded or soldered end connections or cast-iron body and bolted cap, horizontal-swing bronze disc, flanged or grooved end connections. Face discs for cold water service can be Buna-N or Teflon.

C. Silent Check Valves: cast-iron body, bronze trim, stainless steel spring and flanged end connections.

D. Lift check valves shall be globe style, streamline, spring loaded.

E. Manufacturers

Crane Co.
Hammond Valve Corp.
NIBCO, Inc.
Or approved equal.

2.06 COCKS

A. Cocks, where specified or shown on the Drawings shall be for not less than 150 psi working pressure. Asbestos packed cocks will not be approved.

2.07 PLUG VALVES

A. Lubricated Plug Valves shall be of the lubricated tapered plug type, with cast iron body. Plugs shall be Teflon coated and fitted with an "O" ring packing.

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- B. Tapered plugs shall be faced with a thermally bonded anti-friction material. Valves shall have "Sealed Port" lubrication system allowing complete lubrication of valve while in service, under line pressure, installed in any position.

2.08 BALL VALVES

- A. Ball valves shall be two-piece full ported 600 W.O.G. bronze body, solid blow-out proof stem, teflon seats, chrome plated bronze or brass ball and Teflon seals, corrosion resistant steel lever handles with vinyl grips, balancing stop with screw or solder ends. Screw end ball valve shall be Apollo 70-100, Inc., Milwaukee BA-100, NIBCO T-585-70, or approved equal, and solder end ball valve shall be Apollo 70-200, Milwaukee BA-150, NIBCO T-585-70, or approved equal. Ball valves should be used for up to 2" sizes only.

2.09 VALVES FOR REFRIGERANTS SERVICE

- A. Valves shall have forged brass or bronze bodies conforming to ASME B31.5 Code for Refrigerant Piping.
1. Valves with sweat or flare connections, in sizes up to and including 5/8" OD shall be of packless metal diaphragm type and 3/4" OD larger, for use in hard temper tubing with sweat connections shall be of packed type with wing cap. Packed valves shall be backseating to permit repacking under pressure and the wing cap shall have a socket formed in top, so that it may be inverted and used to turn stem.
 2. Check valves: Spring loaded type with bronze body, bronze disc, neoprene or Teflon seat, bronze bonnet with stainless steel spring.

B. Manufacturers

Alco Control Division
Henry Valve Co.
Sporlan Valve Co.
Or approved equal.

2.10 FORGED OR CAST STEEL VALVES

A. Gate Valves:

1. Class 800, forged steel body and bonnet, wedge, stem and seat ring: stainless steel; bonnet gasket: spiral wound stainless steel with 316

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spiral wound graphite packing ring; hand wheel:
malleable iron or steel, bolted bonnet, OS&Y,
solid wedge, threaded or socket welded ends.

2. Class 300, cast steel body, bolted bonnet, OS&Y,
solid wedge; seat rings: copper nickel alloy or
monel; wedge: steel with stainless steel face
hardened; handwheel: steel or malleable iron,
flanged or welding ends.

B. Check Valves.

1. Horizontal swing check, cast steel body and bolted
cap, Class 300. Disc shall be heavy one piece
construction, suspended on a detachable hinge with
detachable hinge pin. Body and cap: cast steel;
seat ring: Stainless steel; disc: stainless steel
and renewable; hinge pin: stainless steel and
renewable, gasket: soft corrugated iron.
2. Lift check, forged steel body and bolted or union
type cap, Class 600. Body and cap: forged steel;
seat ring: stainless steel; disc: stainless and
renewable, gasket: spiral wound stainless steel
with 316 spiral wound graphite.
3. Silent check, cast steel body, stainless steel
trim and spring, Class 300, flanged ends.
4. Piston Check: Class 800 forged steel body,
stainless steel piston disc and trim, bolted cap,
non-asbestos gasket, threaded or socket welded
ends.

C. Manufacturers

R-P&C Valve/Bonney Forge Corporation
Newco Valves
Vogt Valves
Or approved equal

2.11 VALVE OPERATORS

- A. Provide suitable handwheel for gates, globes or angles,
and drain valves.
- B. Provide one plug valve wrench for every ten plug valves
sized 2" and smaller, minimum of one. Provide each
plug valve sized 2-1/2" and larger with a wrench, with
set screw.
- C. Provide valves located more than 7' from floor in
equipment room areas with chain operated sheaves.
Extend chains to about 5' above floor and hook to
clips arranged to clear walking aisles. Provide
extended valve shafts, 4" min to keep chain away from
pipe insulation.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Except as otherwise indicated, comply with the following requirements:
1. Install valves where required for proper operation of piping and equipment including valves in branch lines where necessary to isolate sections of piping. Locate valves so as to be accessible and so that separate support can be provided when necessary.
 2. Install valves with stems pointed up, in vertical position where possible, but in no case with stems pointed downward from horizontal plane unless unavoidable. Nonrising stem valves shall be used only where headroom prevents full extension of rising stems. Install valve drains with hose-end adapter for each valve that must be installed with stem below horizontal plane.
 3. Install gate valves for shut-off; to isolate equipment, parts of systems, and vertical risers and any banked system of coils and to separate each coil.
 4. Hose gate valves: Provide hose gate valves to drain the pipe at the low points of the system.
 5. Install globe for throttling service and control device.
 6. Use tapered lubricated plug valves in water systems for throttling service and at the discharge of all pumps. Use nonlubricated plug valves only when shut-off or isolating valves are also provided.
 7. Provide tapered lubricated 1" drain gate valves at main shut-off valves, and at all low points of piping and apparatus.
 8. Provide 1" gate vent valves at all high points in the piping system.
- B. Insulation: Where insulation is indicated, install extended-stem valves, arranged in proper manner to receive insulation.
- C. Mechanical Actuators: Install mechanical actuators with chain operators where indicated on the Drawings. Extend chains to about 5'6" on the floor and hook to clips to clear aisle passage.

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3.02 ADJUSTING AND CLEANING

- A. Valve Adjustment: After piping systems have been tested and put into service, but before final testing, adjusting, and balancing, inspects each valve for possible leaks. Adjust or replace packing to stop leaks, replace valve if leak persists.
- B. Cleaning: Clean factory-finished surfaces. Repair any marred or scratched surfaces with manufacturer's touch-up paint.

3.03 MINIMUM VALVE REQUIREMENTS (MC 1205)

- A. Shutoff valves shall be installed on the supply and return side of all heat exchangers.
- B. Shutoff valves shall be installed on the building supply and return of central utility systems and district heating and cooling systems.
- C. Shutoff valves shall be installed on the connection to any pressure vessel.
- D. Shutoff valves shall be installed on both sides of a pressure-reducing valve.
- E. Shutoff valves shall be installed on connections to mechanical equipment and appliances. This requirement does not apply to components of a hydronic system such as pumps, air separators, metering devices and similar equipment.

3.03 VALVES SCHEDULES APPLICATION

- A. Cold Water in Buildings
 - 1. 2-1/2" and Less: Solder end; Class 125, bronze body gates; and swing checks.
- B. Hot and Dual Water Temperature
 - 1. 4" and Less: solder ends; Class 125, bronze body gates, swing checks. Grooved copper ends 2" and up.
 - 2. 5" and Up: Flanged ends; Class 125, OS&Y iron body gates; and bolted cover, renewable disc checks.

3.04 VALVE SCHEDULES

- A. Gate valves - 2-1/2 inch and Less:

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<u>Class 125:</u>				
<u>Manufacturer</u>	Threaded	Threaded	Solder	Solder
	NRS	RS	NRS	RS
Crane	438	428	1701S	1700S
Hammond	IB645	IB640	IB647	IB635
Nibco	T113	T111	S113	S111
Approved equal				

B. Gate valves - 3 inch and Up

<u>Class 125:</u>		
<u>Manufacturer</u>	OS&Y RS	NRS
Crane	465-1/2	461
Hammond	IR1140	IR1138
Nibco	F-617-0	F-619
Approved equal		

C. Swing Check valves - 2-1/2 inch and Less:

	Class 125 Threaded	Class 125 Solder	Class 150 Threaded
<u>Manufacturer</u>	<u>Ends</u>	<u>Ends</u>	<u>Ends</u>
Crane	37	1340	141TF
Hammond	IB904	IB912	IB946
Nibco	T-413B	S-413B	T-433Y
Approved equal			

<u>Class 300:</u>	
<u>Manufacturer</u>	<u>Threaded</u>
Crane	76E
Hammond	IB949
Nibco	T-473-B
Approved equal	

D. Swing Check valves - 3 inch and Up

<u>Manufacturer</u>	<u>Class 125</u>
Crane	373
Hammond	IR1124
Nibco	F-918
Approved equal	

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SECTION 230549
VIBRATION ISOLATION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide a complete system of vibration isolation for each item of HVAC and Electrical equipment and apparatus as specified herein, as shown on the Drawings and as needed for a complete and proper installation.

1.02 RELATED SECTIONS

- A. Division 23 Sections
- B. Division 26 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Product Data: Submit Manufacturer's Product Data for the vibration isolating supports required for each item of HVAC and Electrical equipment.
 - 1. Submit schedule showing manufacturers' mounting sizes and guarantee deflections.
- B. Shop Drawings: Submit Shop Drawings for the vibration isolating supports required for each item of HVAC and Electrical equipment, showing details of intermediate structural steel members and method of attachment required for installation of vibration isolating devices.
- C. Manufacturer's certification as specified in the Field Quality Control Article.
- D. Maintenance data.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

- A. Manufacturer's Regulating Requirements: Contractors shall determine vibration isolation sizes and locations per the criteria defined in Article 3.02.C.
- B. Per MC 301.10: Where vibration isolation of equipment and appliances is employed, supplemental restraint shall be used to accomplish the support and restraint.

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PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Approved manufacturers:

Mason Industries, Inc.
Vibration Eliminator Co.
Vibration Mountings & Controls Inc.
Or approved equal.

2.02 MATERIALS

A. Spring Mounts

1. Housed Spring Mounts: Spring type mounts shall consist of cast telescoping housings containing one or more steel springs. The mount shall be provided with built-in leveling bolt(s), resilient inserts of neoprene to act as guides for upper and lower housings and with ribbed neoprene acoustical pads bonded to the bottom of the lower housing. The lower housing shall have slotted holes in the base, to permit fastening of the mount to the floor.
2. Free standing spring mounts shall be laterally stable without housing. Each mount shall be provided with a leveling bolt, a ribbed neoprene pad on the underside of the base, and means of securing the spring base to the floor when specified. Free standing spring mounts shall be used where a floating pad system or an inertia block is specified.

B. Neoprene-in-Shear Mounts: Each neoprene-in-shear type mount shall consist of a steel top plate and steel base plate completely enclosed in oil resistant neoprene. Top plate shall have a threaded bolt hole for attachment of equipment to mount. Base plate shall have bolt holes, to permit fastening of the mount to the floor when specified. Underside of base plate shall have ribbed, neoprene construction. Single neoprene-in-shear mounts shall have a maximum deflection of 0.25". Double neoprene-in-shear mounts shall have a maximum deflection of 0.50".

B. Hanger Type Isolators: Hanger type isolators shall consist of a steel housing incorporating a single or double neoprene-in-shear element or a steel spring, or a combination of these two isolators, as needed to achieve the required static deflection. Provide threaded rods for attachment of hanger to overhead structure and to equipment.

PART 3 - EXECUTION

3.01 PREPARATION

- A. For vibration isolation equipment installed indoors, all metal parts, including rails and bases, shall be painted at the factory with one coat of primer paint and one coat of aluminum paint. Other means or rust resisting painting may be accepted, subject to prior approval.
- B. Vibration isolation equipment installed outdoors shall have all steel parts hot dipped galvanized, all bolts cadmium plated, and all springs cadmium plated and neoprene coated.
- C. Vibration isolation equipment installed outdoors shall be designed and installed to resist wind loads in accordance with the NYC Building Code.

3.02 SUPPLEMENTAL INSTALLATION

- A. At each equipment location, provide the required deflection under the imposed load to produce uniform loading and deflection even when equipment weight is not evenly distributed. Isolators shall be suitable for the lowest operating speed of the equipment.
- B. Where the floor is waterproofed or finished with waterproof cement, install vibration isolation in such manner that the waterproofing is not damaged.
- C. Isolation equipment shall be in accordance with the following table:

<u>Lowest RPM</u>	<u>Inches Deflection</u> (Min.)	<u>% Efficiency</u>	<u>Type</u>
1750 & over	.25	95	Single neoprene-in-shear
1200-1749	.50	95	Double neoprene-in-shear
1000-1199	.75	95	Spring
570-999	1.25	90-95	Spring
520-569	1.5	90	Spring
330-519	2.0	80-90	Spring

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Up to 329

3.5

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Spring

- D. Install combination spring and double deflection neoprene position hangers on the suction and discharge piping at each circulating pump. Each hanger shall be located on the pump side of the flexible hose connection.
- E. Cooling towers, evaporative condensers, fluid coolers and air cooled condensers located on a roof or floor above grade shall be installed on vibration isolators providing a minimum isolation efficiency of 85 percent at fan motor RPM with a maximum static deflection of 4 inches and shall incorporate a leveling device and resilient pad having a minimum thickness of $\frac{1}{4}$ inch. Refer to MC 908.4.
- F. Per MC 926.2.3: Equipment piping shall be installed as follows:
1. Metal piping connected to power driven equipment shall be resiliently supported from or on the building structure for a distance of 50 pipe diameters from the power driven equipment. The resilient isolators shall have a minimum static deflection of 1 inch for all piping with a 4 inch or larger in actual outside diameter and $\frac{1}{2}$ inch for piping with less than 4 inches in actual outside diameter.
Piping connected to fluid pressure-reducing valves shall be resiliently isolated for a distance of 50 pipe diameters from pressure reducing valves and isolators shall provide a minimum static deflection of $\frac{1}{2}$ inch.
 2. Equipment such as heat exchangers, absorption refrigeration machines, or similar equipment, that are located on any floor or roof other than a floor on grade, and that are not power driven but are connected by metal piping to power driven equipment, shall be resiliently supported from or on the building structure, for a distance of 50 pipe diameters from the power driven equipment. The resilient supports shall be vibration isolators having a minimum static deflection of 1 inch and shall incorporate approved resilient pads having a minimum thickness of $\frac{1}{4}$ inch.
- H. Per MC 926.2.4: All fan equipment located on any roof or floor other than a floor on grade shall be mounted on or from vibration isolators. Fan equipment with motor drives separated from the fan equipment shall be supported on an isolated integral rigid structural base supporting both the fan and motor. Fan equipment with

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motor drives supported from the fan equipment shall be mounted directly on vibration isolators. Each isolator shall have provision for leveling. Isolators shall incorporate resilient pads having a minimum thickness of 1/4 inch. The vibration isolators shall provide a minimum isolation efficiency of 90 percent at fan rotor rpm with a maximum deflection of 2 inches. Fans and compressors of 3 horsepower (2.25 kW) or less assembled in unitary containers may meet this requirement with isolators internal to the container providing the isolators meet the above minimum isolator efficiencies.

- I. Per MC 926.2.5: All pumps of 3 horsepower (2.25 kW) or more located on any floor other than a floor on grade shall be supported on vibration isolators having a minimum isolation efficiency of 85 percent at the lowest disturbing frequency. Each isolator shall incorporate a leveling device and a resilient pad having a minimum thickness of 1/4 inch.
- J. Per MC 926.2.6: Compressors and drives located on a floor other than a floor on grade shall be mounted on vibration isolators having a minimum isolation efficiency of 85 percent at the lowest disturbing frequency. Each isolator shall incorporate a leveling device and a resilient pad having a minimum thickness of 1/4 inch.
- K. Per MC 926.2.9: Duct Connections to Fan Equipment: Flexible connections shall be installed between the fan equipment and connecting ductwork.

END OF SECTION

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SECTION 230553
HVAC IDENTIFICATION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide all the mechanical (HVAC) identification work shown in the Drawing Schedules, specified in other Division-23 Sections and needed for a complete and proper installation. The types of identification devices specified in this Section include the following:

Painted Identification Materials
Plastic Pipe Markers
Valve Tags
Valve Schedule Frames
Plastic Equipment Markers
Plasticized Tags

1.02 RELATED SECTIONS

- A. Division 23 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Shop Drawings: Provide list of identification wording, symbols, letter size, and color coding.
- B. Schedules: Submit valve schedule for each piping system, typewritten and reproduced on 8-1/2" x 11" bond paper. Include valve number, piping system, system abbreviation (as shown on tag), location of valve (room or space), and variations for identification (if any). Mark valves that are intended for emergency shut-off and similar special uses by special "flags" in margin of schedule.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

- A. Codes and Standards

1. ANSI Standards: Comply with ANSI A13.1 for lettering size, length of color field, colors, and viewing angles.

PART 2 - PRODUCTS

2.01 MATERIALS AND MANUFACTURERS

- A. Provide manufacturer's standard products of categories and types required for each application as referenced in other Division-23 Sections (HVAC), shown on the Drawings and/or Schedules. Where more than single type is specified for

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application, selection is the Commissioner option, but provide single selection for each product category.

B. Painted Identification Materials:

1. Stencils: fiberboard stencils, prepared for required applications with letter sizes generally complying with recommendations of ANSI A13.1.
 - a. Stencil Paint: exterior type stenciling enamel except as otherwise indicated on the Drawings; either brushing grade or pressurized spray-can form and grade.
 - b. Identification Paint: enamel of colors indicated or, if not otherwise indicated for piping systems, comply with ANSI A13.1 for colors or as selected by the Commissioner.

C. Plastic Pipe Markers:

1. Snap-On Type: Pre-printed, semi-rigid snap-on, color-coded pipe markers, complying with ANSI A13.1 or as selected by the Commissioner.
2. Provide 1" thick molded fiberglass insulation with jacket for the plastic pipe marker to be installed on uninsulated pipes subjected to fluid temperatures of 125° F or greater. Cut length to extend 2" beyond each end of plastic pipe marker.
3. Small Pipes: For external diameters less than 6" (including insulation if any), provide full-band pipe markers, extending 360° around pipe, fastened by snap-on application of pre-tensioned semi-rigid plastic pipe marker.
4. Large Pipes: For external diameters of 6" and larger (including insulation if any), provide either full-band or strip-type pipe markers, but not narrower than 3 times letter height, fastened by strapped-to-pipe (or insulation) application of semi-rigid type, with stainless steel bands.
5. Lettering: Pre-printed nomenclature which best describes piping system in each instance, as shown on the Drawings or as selected by the Commissioner in cases of variance with name shown or specified.
 - a. Arrows: Print each pipe marker with arrows indicating direction of flow, either integrally with piping system service lettering (to

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accommodate both directions), or as separate unit of plastic.

D. Valve Tags

1. Brass Valve Tags: 19-gage polished brass valve tags with stamp-engraved piping system abbreviation in 1/4" high letters and sequenced valve numbers 1/2" high, and with 5/32" hole for fastener.
 - a. Provide 2" sq tags
 - b. Numbers and letters shall be block type, indented and filled with durable black compound.
2. Valve Tag Fasteners: solid brass chain (wire link or beaded type), or solid brass S-hooks of the size required for proper attachment of tags to valves, and manufactured specifically for that purpose.

E. Valve Schedule Frames: For each page of valve schedule, provide safety glass in wood or aluminum self-closing frame, with screws for mounting on masonry walls.

H. Plastic Equipment Markers:

1. Laminated plastic, color coded equipment markers. Conform to the following color code if not specified otherwise:

Green: Cooling equipment and components.

Yellow: Heating equipment and components.

Yellow/Green: Combination cooling and heating equipment and components.

Brown: Energy reclamation equipment and components.

Blue: Equipment and components that do not meet any of the above criteria.

For hazardous equipment, use colors and designs recommended by ANSI A13.1.

2. Nomenclature: Include the following matching terminology on schedules and Drawings as closely as possible:

Name and plan number

Equipment service

Design capacity

Other design parameters such as pressure drop, entering and leaving conditions, rpm, and all other items and accessories

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3. Size: approximate 2-1/2" x 4" markers for control devices, dampers and valves; and 4-1/2" x 6" for equipment.
- J. Plasticized Tags: Pre-printed or partially pre-printed accident-prevention tags, of plasticized card stock with matt finish suitable for writing, approximately 3-1/4" x 5-5/8", with brass grommets and wire fasteners, and with appropriate pre-printed wording including large-size primary wording (as examples: DANGER, CAUTION, DO NOT OPERATE).
- K. Lettering and Graphics:
 1. Coordinate names, abbreviations and other designations used in the identification work with corresponding designations shown on the Drawings or Schedules, or specified. Provide numbers, lettering and wording as indicated or, if not otherwise indicated, as recommended by manufacturers or as required for proper identification and operation/maintenance of systems and equipment.
- L. Approved Manufacturers

Allen Systems, Inc.
Brady (W.H.) Co.; Signmark Div.
Industrial Safety Supply Co., Inc.
Or approved equal.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Coordination: Where identification is to be applied to surfaces that require insulation, painting or other covering or finish, including valve tags in finished mechanical spaces, install identification after completion of covering and painting. Install identification prior to installation of acoustical ceilings and similar removable concealment.
- B. Piping System Identification: Install pipe markers and color bands and include arrows to show direction wherever piping is exposed to view in occupied spaces, machine rooms, accessible maintenance spaces (shafts, tunnels, plenums) and exterior non-concealed locations.
 1. Near each valve and control device
 2. Near each branch, excluding short take-offs for terminal units; mark each pipe at branch, where there could be question of flow pattern.

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3. Near locations where pipes pass through walls or floors/ceilings, or enter non-accessible enclosures.
4. Near major equipment items and other points of origination and termination.
5. Spaced intermediately at maximum spacing of 50' along each piping run, except reduce spacing to 25' in congested areas of piping and equipment.
6. On piping above removable acoustical ceilings except omit intermediately spaced markers.

C. Valve Identification:

1. Provide valve tag on every valve, cock and control device in each piping system; exclude check valves, valves within factory-fabricated equipment units, and shut-off valves at HVAC terminal devices and similar rough-in connections of units. List each tagged valve in valve schedule for each piping system.
 - a. Tagging Schedule: Comply with requirements of "Valve Tagging Schedule" at end of the Section.
2. Mount valve schedule on frames located in machine rooms where indicated or, if not otherwise indicated, where directed by the Commissioner.

D. A permanent factory-applied name-plate(s) shall be affixed to appliances (reference MC 301.6) on which shall appear in legible lettering, the manufacturer's name or trademark, the model number, serial number and the seal or mark of the approved agency. A label shall also include the following:

1. Electrical equipment and appliances: Electrical rating in volts, amperes and motor phase; identification of individual electrical components in volts, amperes or watts, motor phase; Btu/h output; and required clearances.
2. Fuel-burning units: Hourly rating in Btu/h; type of fuel approved for use with the appliances; and required clearances.

E. Mechanical Equipment Identification:

- 1a. Install plastic equipment marker near each major item of mechanical equipment and each operational device, as specified herein if not otherwise specified for each item or device in their respective sections. Provide

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signs for the following general categories of equipment and operational devices:

- a. Main control and operating valves, including safety devices
 - b. Meters, gauges, thermometers and similar units
 - c. Strainers, filters, humidifiers, water treatment systems, thermostatic traps and similar equipment
 - d. Primary balancing dampers, mixing boxes
- 1b. Provide permanent factory-applied name-plate(s) for all appliances as defined in Article 3.01.D including but not limited to the following:
- a. Fuel-burning units including boilers, furnaces and heaters units
 - b. Pumps, compressors, chillers, condenser and similar motor-driven units
 - c. Converters, heat exchangers, coils, evaporators, heat recovery units and similar equipment
 - d. Fans, blowers and VAV terminals
 - e. Packaged HVAC central-station, zone-type units, heat pumps, air handling units, heating and ventilating units
 - f. Tanks and pressure vessels
2. Plastic equipment marker lettering Size: Minimum 1/4" high lettering for name of unit where viewing distance is less than 2', 1/2" high for distances up to 6', and proportionally larger lettering for greater distances. Provide secondary lettering 2/3 to 3/4 of size of principal lettering.
3. Text of Signs: In addition to name of identified unit, provide lettering to distinguish between multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations.
4. Optional Use of Plasticized Tags: At the Commissioner's option, where equipment to be identified is concealed above acoustical ceiling or similar concealment, plasticized tags shall be installed within concealed

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space to reduce amount of text in exposed sign (outside concealment).

- a. Operational valves, dampers and similar minor items located in non-occupied spaces (including machine rooms) shall be identified by plasticized tags.

3.02 VALVE TAGGING SCHEDULES

- A. Numbers: Arrange the numbering of valves in the following manner:
 1. In First Story - No. 1000 to No. 1999.
 2. On Roof or in Roof Penthouse or Bulkhead-No. R1 to No. R999.
- B. In no case shall a number applying to one story, be assigned to a valve located in another story.
- C. For other information, refer to the Drawings.

END OF SECTION

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SECTION 230593
CLEANING AND TESTING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide Cleaning and Pressure/Operational Testing for the HVAC Work done on this Project.

1.02 RELATED SECTIONS

- A. Division 23 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Product Data: List of instruments to be used for each test. Include instrument calibration requirements as specified.
- B. Quality Control Submittals
1. Submit Field Cleaning/Test Results For The Following:
 - a. Piping Pressure Tests
 - b. Low Pressure Hot Water Heating Boiler and Pressure Vessels: Hydrostatic Test and Relief Valve Test
 - c. Hot Water System: Cleaning and Operational Tests
 - d. Refrigeration Systems: Pressurization Tests, Dehydration Tests, and Operational Tests
 - e. Chimney and Breeching Pressure Smoke Test
 - f. Post Cleaning Report
- B. Refrigerant: Submit the record of the weight in pounds of refrigerant charged into each system to the City of New York.
- C. Test Schedule and Procedures Plan: Submit time schedule and copy of the step-by-step testing procedures for each system. Isolating valves and flanges, vent fittings and pressure gauges utilized during the testing shall be indicated on the submitted appropriate shop drawings.

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1.04 SUPPLEMENTAL QUALITY ASSURANCE

A. Regulatory Requirements

1. Perform testing of factory fabricated equipment in accordance with all the City agencies having jurisdiction.
2. Perform field-testing of piping systems in accordance with all the City agencies having jurisdiction and as specified.

1.05 PROJECT CONDITIONS

- A. Protection: During Test Work, protect controls, gauges and accessories that are not designed to withstand test pressures. Do not utilize permanently installed gauges for field-testing of systems.

1.06 SEQUENCING AND SCHEDULING

- A. Transmit written notification of proposed date and time of all tests to the Commissioner at least 5 days in advance of such tests.
- B. Perform Cleaning and Testing Work in the presence of the Commissioner. An independent Licensed in New York State Professional Engineer retained by the Commissioner shall additionally witness the 120-hour Operational Tests (for systems other than Building Management Systems and Direct Digital Control Systems which need not be witnessed since monitored parameters will be trended).
- C. Pressure test piping systems inside buildings, at the roughing-in stage of installation, before piping is enclosed by construction work and at other times as directed. Perform test operations in sections as required and directed, to progress the Work in a satisfactory manner and not delay the general construction of the building. Valve or cap-off sections of piping to be tested. Contractor can utilize valves required to be installed in the permanent piping systems, or temporary valves or caps as required to perform the Work. The contractor is responsible to provide all isolation valves/flanges required in order to perform the pressure testing. Testing valves/flanges shall be indicated on the submitted shop drawings. Contractor shall also provide all vents required to vent the air out of the piping prior to performing a hydrostatic test. Fittings for pressure gauges shall be located at the top of the risers. Vent fittings and pressure gauge fittings shall be shown on the submitted shop drawings.

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D. 120-Hour Operational Tests:

1. For systems that run in the occupied mode and unoccupied mode (i.e. night setback conditions with a Building Management System and Direct Digital Control Systems), the 120 hour test shall consist of multiple contiguous occupied and unoccupied periods to verify that the systems perform the required sequence of operations in both the occupied and unoccupied time periods. The setup of the 120-hour Operational Testing shall be witnessed by the Commissioner.

E. Accepted Tolerance Levels:

During occupied and unoccupied periods, the control loops under test shall maintain control of the process variable within the following tolerances:

- Duct Static Pressure +/- 0.3 " wc
- Pump Head Pressure +/- 10% of control range
- Duct Temperature Loops +/- 2 degrees F
- Room Temperature Loops +/- 1 degree F
- Pipe Temperature Loops +/- 2 degrees F
- Duct Humidity +/- 2% rated error of transmitter
- Room Humidity +/- 2% rated error of transmitter

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Certified Test Equipment and Instruments: Type and kind shall be as required for the particular system under test. All gauges, instruments and test devices shall be provided with a certificate of calibration and calibration curve or letter indicating that a minimum of five (5) test points have been calibrated. The certificate and letter must show date of last calibration. The calibration date must be within a year of the testing date.
- B. Test Media (air, gas, refrigerant, water): As specified for the particular piping or system under test.
- C. Cleaning Agent (chemical solution, steam, water): As specified for the particular piping, apparatus or system being cleaned.

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- D. Glycol: Permanent type anti-freeze as manufactured by Dow Chemical Co. or Union Carbide.
- E. Contractor's Responsibility: The Contractor shall provide energy, fuel, oil, water, air, light and electrical instruments as required for all testing.

PART 3 - EXECUTION

3.01 PRELIMINARY WORK

- A. Thoroughly clean pipe and tubing prior to installation. During installation, prevent foreign matter from entering the systems. Prevent if possible and remove stoppages or obstructions from piping and systems.
- B. Thoroughly clean refrigerant pipe prior to pressure or vacuum testing.

3.02 CONTRACTOR'S RESPONSIBILITY

- A. The Contractor shall provide gas, refrigerant, energy, fuel, oil, water, air, light and electrical instruments as required for all testing, including testing associated with Special Inspections (unless otherwise noted).
- B. Although the City of New York will select Special Inspection Firms and pay for all Special Inspection services, the Contractor shall furnish labor, material, and instruments necessary to conduct all acceptance tests at no additional cost to the City of New York including testing associated with Special Inspections. Contractor shall provide access for Special Inspections and testing laboratory services.

3.03 PRESSURE TESTS - PIPING

- A. Apply tests as specified below. No work shall be covered or concealed before it is tested. Piping may be concealed after the hydrostatic test and an inspection of the position, pitch and allowance for expansion has been made.
- B. Hydrostatic Tests: hot water systems shall be tested at one and one half times the system design operating pressure, but not less than 100 pounds per square inch hydrostatic pressure maintained for at least 2-hours during the progress of installation. All leaks shall be properly eliminated. Caulking of leaky joints is not

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permitted. For testing purposes, end of piping to be tested shall be plugged or capped. Convector, thermostatic vacuum traps, float-thermostatic traps, pneumatic valves and other equipments or apparatus which may be damaged by this hydrostatic test shall be excluded from the test.

3.04 TESTING OF EQUIPMENT, APPARATUS AND APPURTENANCES

- A. Hot Water Boilers: Perform field hydrostatic test at 30 psig, after installation, with piping connections shut-off.
- C. Pressure Vessels: Perform field hydrostatic test at 1.5 times the maximum operating pressure after installation with all piping connections shut-off.
- D. Boilers and pressure vessels shall be factory tested in accordance with the ASME Boiler and Pressure Code. Per MC 1011.1 Tests: Upon completion of the assembly and installation of boilers and pressure vessels, acceptance tests (above) shall be conducted in accordance with the requirements of the ASME Boiler and Pressure Vessel Code. Boilers shall not be placed in operation upon completion of construction until they have been inspected and tested and a Certificate of Compliance has been issued by the Commissioner. All final inspections and tests for boilers shall be made by a qualified boiler inspector in the employ of the department or a duly authorized insurance company as provided in Section 204 of the Labor Law of the State of New York. Equipment having a Btu input of not more than 350,000 Btu/h shall be exempt from this requirement. Where field assembly of pressure vessels or boilers is required, a copy of the completed low pressure H-2, high pressure P-2 or unfired pressure vessel U-1 Manufacturer's Data Report required by the ASME Boiler and Pressure Vessel Code shall be submitted to the department.
- E. Relief Valves: Increase pressure in equipment or apparatus to relief valve setting to test opening of valves at required relief pressures.
- F. Damper: The dampers, deflectors, and other items and accessories, shall be tested and adjusted during the balancing of systems work.
- G. Test gauges. An indicating test gauge shall be connected directly to the boiler or pressure vessel where it is visible to the operator throughout the duration of the test. The pressure gauge scale shall be graduated over a range of not less than one and one-half times and not

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greater than four times the maximum test pressure. All gauges utilized for testing shall be calibrated and certified by the test operator. Reference MC 1011.2.

3.05 HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS - CLEANING AND OPERATIONAL TESTING

A. Hot Water Systems

1. After the hot water systems installation has been completed, they shall be chemically cleaned. Notify the Commissioner 5-days in advance of starting the cleaning operation. In the presence of the Commissioner one of the following solutions shall be placed in the system and circulated: (1) Trisodium Phosphate - one pound for each fifty gallons of water in the system; (2) Sodium Carbonate -one pound for each thirty gallons of water in the system; or (3) Sodium Hydroxide (Lye) - one pound for each fifty gallons in the system. Their preference is in the order named, and a solution of only one type shall be used.
2. Fill, vent, and circulate this solution through the system, allowing it to reach design or operating temperature. After circulating for not less than 4-hours, the solution shall be drained completely from the system, strainers shall be cleaned, and the system shall be refilled with fresh water. The water shall be circulated for one hour, and, at that time, a sample of the water shall be tested for alkalinity in the presence of the Commissioner.
3. Operational Test: Run system in an automatic mode for a minimum of 120-Operational hours (after the final balancing as defined in Section 230594).

3.06 REFRIGERATION SYSTEMS (Reference: MC 1108, BC 1704.15)

- A. MC 1108.1 General: Every refrigerant-containing part of every system that is erected on the premises, except compressors, condensers, vessels, evaporators, safety devices, pressure gauges and control mechanisms that are listed and factory tested, shall be tested and proved tight after complete installation, and before operation. Tests shall include both the high-and low-pressure sides of each system at not less than the lower of the design pressures or the setting of the pressure relief device(s). The design pressures for testing shall be those listed on the condensing unit, compressor or compressor unit name-plate, as required by ASHRAE 15.

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Exceptions:

1. Systems using an A1 refrigerant erected on the premises with copper tubing not exceeding 5/8-inch (15.8 mm) OD, with wall thickness as required by ASHRAE 15, shall be tested in accordance with MC 1108.1, or by means of refrigerant charged into the system at the saturated vapor pressure of the refrigerant at 70°F (21°C) or higher.
- B. MC 1108.2 Test gases: Tests shall be performed with an inert-dried gas including, but not limited to, nitrogen and carbon dioxide. Oxygen, air, flammable gases and mixtures containing such gases shall not be used.

Exceptions:

1. Mixtures of dry nitrogen, inert gases, or a combination of them with nonflammable refrigerants in concentrations of a refrigerant weight fraction (mass fraction) not exceeding 5 are allowed for tests.
- C. MC 1108.3 Test apparatus: The means used to build up the test pressure shall have either a pressure-limiting device or a pressure-reducing device and a gauge on the outlet side.
- D. MC 1108.4 Declaration: A certificate of test shall be provided for all systems containing 55 pounds (25 kg) or more of refrigerant. The certificate shall give the name of the refrigerant and the field test pressure applied to the high-side and the low side of the system. The certification of test shall be signed by the installer and shall be made part of the public record.
- E. Operational Test: Run system in an automatic mode for a minimum of 120-Operational hours.

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3.07 CHIMNEY AND BREECHING PRESSURE SMOKE TEST (Reference MC 810,
BC 1704.23 and 1704.24)

- A. After the completion of the stainless steel liner in the existing chimney and breeching, to determine the tightness of both constructions, a Smoke Test shall be made in accordance with the NYCDOB Building Code BC 1704.23 and BC 1704.24. The Commissioner shall witness all Smoke Tests. Independent Special Inspector retained by the City of New York shall additionally witness the Smoke Test. Perform the test when the building is not occupied. Isolate the boiler during the test. No work shall be covered or concealed before testing.
- B. MC 810.1 Test run: Chimneys shall be test run under operating conditions to demonstrate fire safety and the complete exhausting of smoke and the products of combustion to the outer air. The test run shall be witnessed by a registered design professional overseeing the test (i.e. Special Inspector), and the results of such test run shall be certified as correct by such professional and submitted in writing to the department.
- C. MC 810.2 Requirement of a smoke test: A smoke test shall be made as outlined below in MC 810.3. Any faults or leaks found shall be corrected by the Contractor. Such smoke test shall be witnessed by the Commissioner. In lieu thereof, the Commissioner may accept the test report of a registered design professional responsible for the test (Special Inspector) which shall be submitted in writing to the department.
- D. MC 810.3 Smoke test: To determine the tightness of chimney construction, a smoke test shall be made in accordance with the following conditions and requirements:
1. The equipment, materials, power and labor necessary for such test shall be furnished by, and at the expense of the Contractor who is the holder of the work permit. The City of New York will select HVAC Special Inspection Firm and pay for all Special Inspection services.
 2. If the test shows any evidence of leakage or other defects, such defects shall be corrected by the Contractor and the test shall be repeated until the results are satisfactory.
 3. The Contractor shall fill the breeching/chimney with a thick penetrating smoke produced by one or more smoke

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machines, or smoke bombs, or other equivalent method. As the smoke appears at the stack opening on the roof, such opening shall be tightly closed and a pressure equivalent to 1/2-inch (13 mm) column of water measured at the base of the stack, shall be applied. The test shall be applied for a length of time sufficient to permit the inspection of the chimney.

3.08 HVAC SYSTEM CLEANING

- A. The Contractor shall be responsible for the removal of visible surface contaminants and deposits from within the HVAC system as defined herein.

- C. The HVAC system includes any interior surface of the facility's air distribution system for conditioned spaces and/or occupied zones. This includes the entire heating, air-conditioning and ventilation system from the points where the air enters the system to the points where the air is discharged from the system. The return air grilles, return air ducts to the air handling unit (AHU), the interior surfaces of the AHU, mixing box, coil compartment, condensate drain pans, dehumidifiers, supply air ducts, fans, fan housing, fan blades, turning vanes, filters, filter housings, reheat coils, and supply diffusers are all considered part of the HVAC system. The HVAC system shall also include other components such as dedicated exhaust and ventilation components and make-up air systems.

- D. Post-Cleaning Report

At the conclusion of the cleaning, the Contractor shall provide a report to the Commissioner and Engineer of Record indicating the following:

- 1. Success of the cleaning project, as verified through visual inspection.

- 2. Areas of the system that were found to be damaged and/or needed repair which were remediated by the Contractor.

END OF SECTION

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SECTION 230594
BALANCING OF SYSTEMS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Section 230501, Basic HVAC Requirements, shall be referred to for general requirements. Section 230594 specifies requirements for the final adjusting and balancing of air and hydronic fluid distribution systems, including the equipment and devices associated with each system to produce the design objectives.
- B. The Work shall include checking installations for conformity to design, setting final flow and fan and pump speed, adjusting equipment and devices, recording data, preparing and submitting final balancing reports, and recommending modifications to the mechanical installations.
- C. The following related work is specified in other Sections, and is not part of the Work of this Section:
 - 1. Installation and start-up of equipment and devices
 - 2. Pressure testing of piping and leakage testing ductwork systems.
 - 3. Electrical hook-up and wiring of equipment and devices
- D. Retain the services of an independent testing, adjusting, and balancing firm meeting the qualifications specified to be the single source of responsibility to test, adjust, and perform a final balance of the building mechanical systems specified and identified in this Project.

1.02 PERFORMANCE REQUIREMENTS

- A. Procedures, measurements, instruments and final reports for adjusting and balancing work shall comply with the applicable provisions of the codes, standards, recommendations of the following:
 - 1. American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)
 - 2. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA) HVAC SYSTEMS Testing, Adjusting & Balancing Manual (latest edition)

3. National Environmental Balancing Bureau (NEBB)
 4. Associated Air Balance Council (AABC)
 5. Testing, Adjusting and Balancing Bureau (TABB)
 6. International Training Institute (ITI) for the Sheet Metal and Air Conditioning Industry
 7. New York City Building Code
- B. The final air delivery or intake of each diffuser, grille and register shall be as designed or within 10% of the airflow rates shown on the Drawings.
- C. The final fan airflow rate and static pressure rise across the fan shall be within 10% above the design value at design speed.

1.03 JOB CONDITIONS

- A. Contractor shall have the balancing specialist review all the work with the respective manufacturers of the equipment and devices involved and shall coordinate all the Work. The balancing specialist shall examine the Drawings and Specifications to become familiar with Project requirements and to discover conditions in systems' designs that may preclude proper adjusting and balancing of systems and equipment.
- B. Provide balancing dampers, pressure taps, gauges, valves, and any other items and components as required for a properly balanced system, whether or not specified herein or shown on the Drawings, all at no additional cost to the City of New York. Adjustment or replacement of parts recommended by the balancing specialist shall be made in strict accordance with the respective manufacturer's recommendations.
- C. The Contractor shall set the adjustment of the automatically operated dampers, control valves and all the other items and accessories to operate.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

- A. Persons performing the Work of this Section shall be certified by NEBB, AABC, TABB. The testing, adjusting and balancing firm shall have a Professional Engineer licensed in the State of NY (on staff or a sub-consultant of the testing, adjusting and balancing firm) who shall sign and seal all the reports.

1.05 SUPPLEMENTAL SUBMITTALS

- A. Qualification Data: Submit copies of evidence that the firm and balancing specialist meet the qualifications specified in Supplemental Quality Assurance Article.
- B. Submit blank forms of reports indicating all data to be included and step-by-step procedures. All forms submitted shall be the standard forms issued by NEBB or AABC or as illustrated in the SMACNA HVAC SYSTEMS Testing, Adjusting & Balancing Manual. Custom made forms are not acceptable.

Sample of Report Forms:

Submit standard report forms according to AABC, NEBB or SMACNA standards as an example of the forms that will be submitted when the balancing report is completed. Forms shall include but not be limited to the following information:

- 1. Title Page:
 - a. Company name
 - b. Company address
 - c. Company telephone number
 - d. Project name
 - e. Project location
 - f. Project Contractor
 - g. Commissioner
- 2. Instrument List:
 - a. Instrument
 - b. Manufacturer
 - c. Model
 - d. Serial number
 - e. Range
 - f. Calibration date
- 3. System Diagrams: Include schematic layouts of air and hydronic distribution systems. Present each system with single-line diagram and include the following:
 - a. Quantities of outside, supply, return, and exhaust airflows
 - b. Water flow rates
 - c. Duct, outlet, and inlet sizes
 - d. Pipe and valve sizes and locations
 - e. Terminal units, including VAV
 - f. Balancing stations
 - g. Position of balancing devices

4. Air Moving Equipment: (Supply Fans)
 - a. Location
 - b. Manufacturer
 - c. Model
 - d. Airflow, specified and actual
 - e. Return airflow, specified and actual
 - f. Outside airflow, specified and actual
 - g. Total static pressure (total external), specified and actual
 - h. Inlet pressure
 - i. Discharge pressure
 - j. Fan RPM

5. Exhaust Fan Data:
 - a. Location
 - b. Manufacturer
 - c. Model
 - d. Airflow, specified and actual
 - e. Total static pressure (total external) specified and actual
 - f. Inlet pressure
 - g. Discharge pressure
 - h. Fan RPM

6. Electric Motors:
 - a. Manufacturer
 - b. HP/BHP
 - c. Phase, voltage, amperage; nameplate, actual, no load
 - d. RPM
 - e. Service factor
 - f. Starter size, rating, heater elements

7. V-Belt Drive:
 - a. Identification/location
 - b. Required driven RPM
 - c. Driven sheave, diameter and RPM
 - d. Belt, size and quantity
 - e. Motor sheave, diameter and RPM
 - f. Center to center distance, maximum, minimum, and actual

8. Duct Traverse:
 - a. System zone/branch
 - b. Duct size
 - c. Area
 - d. Design velocity
 - e. Design airflow
 - f. Test velocity
 - g. Test airflow

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- h. Duct static pressure
 - i. Air temperature
 - j. Air correction factor
9. Variable Air Volume Boxes:
- a. Air-Handling unit identification.
 - b. Location and zone.
 - c. Type, non-fan powered or fan powered
 - d. Area served
 - e. Manufacturer
 - f. Number from system diagram
 - g. Type and model number
 - h. Size.
 - i. Design velocity
 - j. Test (final) velocity
 - k. Room Temperature, specified and actual
 - l. Minimum static pressure
 - m. Minimum design airflow
 - n. Maximum design airflow
 - o. Maximum actual airflow
 - p. Inlet static pressure
 - q. Entering-air temperature
 - r. Leaving-air temperature
10. Air Distribution Test Sheet:
- a. Air outlets and inlets number
 - b. Room number/location
 - c. Outlets and inlets type
 - d. Outlets and inlets size
 - e. Area factor
 - f. Design velocity
 - g. Design airflow
 - h. Test (final) velocity
 - i. Test (final) airflow
 - j. Percent of design airflow
11. Outlets and Inlets Unit Data:
- a. Manufacturer
 - b. Type, constant, variable, single duct
 - c. Identification/number
 - d. Location
 - e. Model
 - f. Size
 - g. Minimum static pressure
 - h. Minimum design airflow
 - i. Maximum design airflow
 - j. Maximum actual airflow
 - k. Inlet static pressure
12. Pump Data:

- a. Identification/number
- b. Manufacturer
- c. Size/model
- d. Impeller
- e. Service
- f. Design flow rate, pressure drop, BHP
- g. Actual flow rate, pressure drop, BHP
- h. Discharge pressure
- i. Suction pressure
- j. Total operating head pressure
- k. Shut off, discharge and suction pressures
- l. Shut off, total head pressure

13. Air Cooled Condensers and Condensing Units:

- a. Identification/number
- b. Location
- c. Manufacturer
- d. Model
- e. Design and actual pressure drop, flow and temperatures.

14. Cooling Coil Data:

- a. Identification/number
- b. Location
- c. Service
- d. Manufacturer
- e. Airflow, design and actual
- f. Entering air DB temperature, design and actual
- g. Entering air WB temperature, design and actual
- h. Leaving air DB temperature, design and actual
- i. Leaving air WB temperature, design and actual
- j. Air pressure drop, design and actual

15. Heating Coil Data:

- a. Identification/number
- b. Location
- c. Service
- d. Manufacturer
- e. Airflow, design and actual
- f. Water flow, design and actual
- g. Water pressure drop, design and actual
- h. Entering water temperature, design and actual
- i. Leaving water temperature, design and actual
- j. Entering air temperature, design and actual
- k. Leaving air temperature, design and actual
- l. Air pressure drop, design and actual

- C. Submit copies of the marked-up Contract Drawings and Certificate of Conformance Certification that assures that the balancing specialist has performed their

contracted services in accordance with the applicable agency's (NEBB, AABC, TABB or ITI) standards and procedures. Copies of Contract Drawings shall be marked up and indicate outlet/inlet diffuser, register and grille identification.

- D. Submit certified reports signed by the licensed professional engineer of the balancing firm. Submit final testing and balancing results on applicable report forms, as approved and furnished by the agency that is certifying the independent member firm performing the Work. The certifying agencies' Instrument Calibration Report should be included in the submission of the completed final balancing forms. The reports shall be certified proof that the systems have been tested, adjusted and balanced; are an accurate representation of how the systems have been installed and are operating; and are an accurate record of all final quantities measured to establish normal operating values of the systems. Each final system report form shall bear the signature of the person performing the Work and the signature of the licensed professional engineer of the performing firm.
- E. Include in final reports uncorrected installation deficiencies noted during the process of adjusting and balancing and applicable explanatory comments.

1.06 SCHEDULING

- A. Perform balancing Work in the presence of the Commissioner.

PART 2 - PRODUCTS

2.01 PATCHING MATERIALS

- A. Unless otherwise shown on the Drawings, use same products as originally installed for patching holes in insulation, ductwork and housings that have been cut or drilled for test purposes, including access for test instruments, attaching jigs, and similar purposes.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Do not proceed with adjusting and final balancing until unsatisfactory conditions have been corrected in a manner approved by the balancing specialist and the Commissioner.

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- B. Examine the air systems to see that they are free from obstructions. Determine that all dampers, grilles and registers are open, that moving equipment is lubricated, that clean filters are installed, automatic controls are functioning, and perform other inspection and maintenance activities necessary for proper operation of the systems.
1. Examine terminal units, such as variable-air-volume boxes, to verify that they are accessible and their controls are connected and functioning.
- C. Examine the hydronic systems to see that they are free from abnormal obstructions, and that all piping, valves and equipment have been properly made fully operational. Determine that all equipment and control systems are performing correctly by functional testing.

3.02 BALANCING AND ADJUSTING - GENERAL REQUIREMENTS

- A. Notify the Commissioner when any deficiencies are detected, whether associated with design, installation, or equipment.
- B. Balancing specialist shall perform all the procedures and compile all the data for all air and hydronic systems. All standard forms (NEBB, AABC, or SMACNA) approved by the certifying agency (NEBB, AABC, TABB or ITI) shall be completed as applicable to the particular project. Missing or incomplete forms shall be justification to reject the balancing report.
- C. Data shall include a schematic diagram locating the air inlets, air outlets, variable-air volume boxes, fans, equipment, dampers and regulating devices for air systems, and a schematic diagram for location of balancing valves, flow indicators, equipment, and devices for hydronic systems.
- D. All instruments used shall be accurately calibrated and maintained in good working order.

3.03 AIR BALANCING

- A. The final adjusting and balancing of air systems shall include but not be limited to the following:
1. Record and adjust fan rpm to design requirements.
 2. Record motor full load amperes.
 3. Make pitot tube traverse of main supply ducts and obtain design flow rate at fans.

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4. Record system static pressure, velocity pressure and total pressure.
 5. Adjust system for design supply, transfer and return airflow rate.
 6. Adjust system for minimum and maximum (economizer) design flow rates of outside air.
 7. Record return air temperatures.
 8. Record entering mix air temperatures.
 9. Record leaving air temperatures.
 10. Adjust all main supply, return, relief, and exhaust air ducts to proper design flow rate.
 11. Adjust each diffuser, grille and register.
 12. Each grille, diffuser and register shall be identified as to location and area on the schematic diagram.
 13. Size, type and manufacturer of diffusers, grilles and registers and all tested equipment shall be identified and listed in the final report. Manufacturer's data on all equipment shall be used to make required calculations for adjusting and balancing. Readings of diffusers, grilles and registers shall include design required and resultant velocity, required and resultant flow rate after adjustments.
 14. All diffusers, grilles and registers shall be adjusted to minimize drafts in all areas.
 15. Dampers shall be permanently marked after air balance is complete so that they can be restored to their correct position, if disturbed later.
 16. Openings in ductwork for pitot tube insertion shall be sealed with snap-in plugs after air balance is complete.
- B. Variable-Air-Volume Systems: After the fan systems have been adjusted, adjust the variable-air-volume systems as follows:
1. Set outside-air dampers at minimum, and return air dampers at a position that simulates full-cooling load.
 2. Select the terminal unit that is most critical to the supply-fan airflow and static pressure.

Measure static pressure. Adjust system static pressure so the entering static pressure for the critical terminal unit is not less than the sum of terminal-unit manufacturer's recommended minimum inlet static pressure plus the static pressure needed to overcome terminal-unit discharge system losses.

3. Measure total system airflow. Adjust to within indicated airflow.
4. Set terminal units at maximum airflow and adjust to deliver the designed maximum airflow. Use terminal-unit manufacturer's written instructions to make this adjustment. When total airflow is correct, balance the air outlets downstream from terminal units.
5. Set terminal units at minimum airflow and adjust to deliver the designed minimum airflow. Check air outlets for a proportional reduction in airflow. If air outlets are out of balance at minimum airflow, report the condition but leave outlets balanced for maximum airflow.
6. Measure static pressure at the most critical terminal unit and adjust the static-pressure controller at the main supply-air sensing station to ensure that adequate static pressure is maintained at the most critical unit.
7. Record the final fan performance data.

3.04 HYDRONIC SYSTEMS:

The adjusting and balancing of hydronic systems shall include but not limited to the following:

- A. Examine water in systems and determine if water has been treated and cleaned.
- B. Check expansion tank to determine that it is not air bound.
- C. Purge all air vents at high points of water systems, check automatic air vents and determine if they are operating properly.
- D. Coordinate with Temperature Controls Contractor for required heating temperature controls and corresponding automatic valve operation settings.
- E. Open all normally open valves to full open position. Set automatic valves to full coil flow.

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- F. Complete air balance shall have been accomplished before final water balance begins.
- G. Check water pumps for pump rotation and for proper flow rate delivery against manufacturers' pump curves.
- H. Set all balancing valves for required flow delivery at mains and branch mains to cooling and heating elements.
- I. Upon completion of final flow readings and adjustments of balancing valves, mark all settings and record data, so that they can be restored to their correct final "balanced" position, if disturbed later.
- J. After required heating temperature controls and balancing valve operation settings are made, recheck pump flow requirements and readjust system as required.
- K. Record pressure drop through coil at set flow rate of coil for full cooling and on full heating. Set pressure drop across bypass valve to match coil pressure drop.
- L. Record and check the following items at each heating element:
 - 1. Inlet water temperatures and static pressure at connections.
 - 2. Leaving water temperatures and the pressure drop of each coil.
 - 3. Flow rate through coil with control valve manually wide open.
- M. Record operating suction and discharge pressures of each pump and final total dynamic head and rated amperage versus actual amperage of pump motors.
- N. Record entering and leaving water temperatures and flow through all equipment and devices.
- O. Check and record all flow rates at all locations in the piping system with flow meters.

END OF SECTION

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SECTION 230701
PIPING INSULATION (HVAC)

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide thermal insulation on the piping (HVAC) required on this Project, as needed for a complete and proper installation; product specific requirements are contained here; section 230501, Basic HVAC Requirements, shall be referred to for general requirements.

All insulation materials shall be free of asbestos.

1.02 RELATED SECTIONS

- D. Division 23 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Schedule listing items to be insulated, description of insulation and finishing procedures

1.04 SUPPLEMENTAL QUALITY ASSURANCE

- A. Installer's Qualifications: Firm with at least three years successful installation experience on projects with mechanical insulations similar to that required for this Project.

- B. Code and Standards

1. Per MC 1204.1 and MC 1204.2: Insulation characteristics: Pipe insulation installed in buildings shall conform to the requirements of the Energy Conservation Construction Code of New York State, shall be tested in accordance with ASTM E 84 and shall have a maximum flame spread index of 25 and a smoke developed index not exceeding 50. Insulation installed in an air plenum shall comply with MC 602.2.1. MC 602.2.1 requires that materials exposed within plenums shall be noncombustible or shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E 84.

Hydronic piping shall be insulated to the thickness required by the Energy Conservation Construction Code of New York State.

2. All insulation material shall be in accordance with the above ASTM E 84 requirements or have OTCR approval.

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3. Comply with ASTM, ASHRAE and New York State Energy Conservation Construction Code Standards.
4. Testing of material and equipment shall be in accordance with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department (MEA) before the effective date of the NYC Construction Codes may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.

1.05 TEMPERATURE REQUIREMENT

- A. Apply adhesive, sealers, coating, and all other items and accessories at the proper temperature as recommended by the manufacturer. If ambient conditions are not acceptable, provide temporary heat as required for proper installation without any delay to the Project completion.

1.06 COORDINATION

- A. Coordinate size and location of supports, hangers, and insulation shields
- B. Coordinate clearance requirements with piping installer for insulation application. Establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Approved Manufacturers:

Thermafiber
Knauf Fiber Glass (Permawick Pipe Insulation)
Johns Manville
Or approved equal.

2.02 MATERIALS

- A. Adhesives and Sealants for Insulation: All adhesives and sealants used on interior building insulation shall comply

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with the South Coast Air Quality Management District (SCAQMD) Rule #1168; VOC limits shall comply with the limits indicated in Table 1 of LEED Version 2.2, Indoor Environmental Quality Section, Credit EQ-4.1. Those limits correspond to an effective date of the SCAQMD Rule #1168 of July 1, 2005, and Rule Amendment date of January 7, 2005.

- B. Products shall not contain asbestos, lead, mercury, or mercury compounds.
- C. Foam insulation materials shall not use CFC or HCFC agents in the manufacturing process.
- D. Pipe Insulation
 - 1. One-piece molded sectional fiber glass insulation made from inorganic glass fibers bonded with a thermosetting resin shall have a nominal 4-pound density with a thermal conductivity (k) of not over 0.23 at 75° F. mean temperature. Insulations shall have factory-applied all-service jacket (ASJ) and adhesive used to adhere the jacket to the insulation. Insulation shall be suitable for use on piping up to 450° F. operating temperature.
 - 2. Preformed polyisocyanurate closed cell insulation with a k-factor of 0.19 at 75° F mean temperature and factory applied Polyvinylidene Chloride (PVDC) vapor retarder film for use in refrigerant lines the equal to Trymer 2000 with Saran Vapor Retarder by The Dow Chemical Company. The insulation thickness shall not exceed 1.0".
 - 3. Mineral-Fiber, Pipe Insulation Wicking System: Preformed pipe insulation made from inorganic glass fibers bonded with a thermosetting resin with absorbent cloth factory applied to the entire inside surface of preformed pipe insulation and extended through the longitudinal joint to outside surface of insulation under insulation jacket. Factory apply a white, polymer, vapor-retarder jacket with self-sealing adhesive tape seam and evaporation holes running continuously along the longitudinal seam, exposing the absorbent cloth. This type of wicking insulation shall be applied as an alternate to the cold piping (refrigerant) systems. Provide Knauf PermaWick Pipe Insulation or Owens Corning VaporWick Pipe Insulation (or equal).
 - 4. Fiberglass Paper-Free ASJ Pipe Insulation: Molded fibrous glass pipe insulation with factory applied paper free all service jacket and double adhesive lap seal closure system, rated for a maximum service temperature of 850°F. Circumferential joints shall be sealed with paper free butt strips that are compatible with the required facing. Stapling shall not be required to complete the closure. Manufacturer's data

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regarding thickness constraints in relation to operating temperature shall be followed. On cold systems, vapor barrier shall be provided. All penetrations and exposed ends of insulation shall be sealed with mold resistant vapor barrier mastic.

E. Jackets

1. Factory-applied: ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing. PVDC-SSL Jacket: PVDC jacket with a self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip. For cold water pipe insulation, the jackets shall be the vapor barrier type, ASJ or PVDC.
2. PVC Plastic: Zeston, one piece molded type fitting covers and jacketing material, gloss white. Connections: Tacks, pressure sensitive color matching vinyl tape.
3. Vapor barrier and weatherproofing jacket shall be a laminated five-ply self-adhesive material; temperature range: -30° F to 300° F; weather resistant; high puncture, tear resistant; product shall be used both indoors and outdoors; zero permeability; manufactured with mold inhibitors: VentureClad 1577CW-All Grade.
4. For outdoor pipe insulations, the jackets shall be made of 0.016" aluminum or stainless steel held with a friction type, Z-lock. The laminated self-adhesive vapor barrier and weatherproofing jacket, the equal to VentureClad 1577CW will also be accepted.

F. Insulation and accessories for valves, fittings, flanges etc. shall include the following:

1. One pound density fiberglass blanket.
2. Segments of pipe insulation.
3. Pre-molded fiberglass fittings.
4. No. 20 gage galvanized steel annealed wire.
5. Insulating cement.
6. In lieu of using coated pre-molded fittings for insulating fittings, valves etc., Zeston premolded 20-mil thick, high impact ultraviolet-resistant one piece PVC fitting covers and pre-cut Hi-Lo-Temp insulation inserts as manufactured by Johns Manville are acceptable. For chilled water pipes and refrigerant

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pipes/tubing, the use of prefabricated insulation for valves, fittings, flanges etc. manufactured by The Dow Chemical Company is acceptable. For cold piping systems (refrigerant lines), the use of the wicking type insulation for valves, fittings, flanges etc. manufactured by The Owens Corning is acceptable.

- G. Bands, staples, tapes, wires, cements, adhesives, sealers and protective finishes: As specified herein or as recommended by insulation manufacturer for proper uses on piping insulations.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Before applying the insulation, all tests specified in Division 23 Sections should have been completed acceptable to the Commissioner. However, thermal insulation can be applied to pipes prior to these tests providing that all fittings are left bare to permit detection and possible leaks.

3.02 SUPPLEMENTAL INSTALLATION

- A. Install insulation on pipe systems subsequent to testing and acceptance of tests.
- B. Install insulation materials with smooth and even surfaces. Insulate each continuous run of piping with full-length units of insulation, with single cut piece to complete run. Do not use cut pieces or scraps abutting each other.
- C. Clean and dry pipe surfaces prior to insulating. Butt insulation joints firmly together to ensure complete and tight fit over surfaces to be covered.
- D. Maintain integrity of vapor-barrier jackets on pipe insulation and protect to prevent puncture or other damage.
- E. Valves shall be insulated up to packing unit.
- F. Fire Seal Application: Where pipes pass through fire walls, fire partitions, fire rated pipe chase walls or floors above grade, insulation shall be interrupted and a fire seal shall be provided as specified in Section 078400: Firestopping.
- G. Extend piping insulation without interruption through walls, floors and similar piping penetrations, except where otherwise indicated.
- H. The temperature of the jacket shall not exceed 150° F.

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- I. Paper laminated jackets shall be permanently treated to retain the flame spread and smoke developed rating. Chemicals used for treating paper jacket laminates shall not be water soluble and shall be unaffected by water and humidity.
- J. Insulation on all cold surfaces must be applied with a continuous, unbroken vapor seal. Hangers, supports, anchors, etc., that are secured directly to cold surfaces must be adequately insulated and vapor sealed to prevent condensation.
- K. All surface finishes are to be extended to protect all surfaces, ends and raw edges of insulation.
- L. General valves, fittings, etc. shall be insulated as follows:
 1. For pipe sizes smaller than 4" wrap firmly under a minimum of a 3:1 compression, with 1 pound density fiberglass blanket, to a thickness equal to adjoining insulation. Secure with No. 20 gage galvanized annealed steel wire. Finish with a smooth coat of insulating cement.
 2. For pipe sizes 4" and larger, fit segments of pipe insulation equal in thickness to adjoining insulation and secure with No 20 gage galvanized annealed steel wire. Finish with a smooth coat of insulating cement.
 3. In lieu of the foregoing methods, the use of pre-molded fiberglass fittings of the same thickness of adjoining pipe insulation will be accepted. Finish with a smooth coat of insulating cement.
 4. In lieu of the foregoing methods, the use of preformed PVC fitting covers with factory precut Hi-Lo Temp insulation insert of the same thickness as adjoining pipe insulation will be accepted. Valves, fittings, etc. shall be insulated by applying the proper factory precut Hi-Lo Temp insulation insert to the pipe fitting, valve, etc. The ends of the Hi-Lo Temp insulation insert shall be tucked snugly into the throat of the fitting, valve etc. and the edges adjacent to the pipe covering tufted and tucked in, fully insulating the pipe fitting, valve, etc. Vapor barrier mastic compatible with the PVC shall be applied around the edges of the adjoining pipe insulation and on the fitting cover throat overlap seam. The PVC fitting cover shall then be applied and shall be secured with pressure sensitive tape along the circumferential edges. The tape shall extend over the adjacent pipe insulation and have an overlap on itself at least 2" on the downward side.
- M. Cold Piping: Install the fiberglass, closed cell or wicking type insulation with factory supplied vapor

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barrier jacket. The use of staples on vapor barrier jacketed insulation is not permitted. The use of vapor barrier and weather proofing jacket on cold water piping systems will be accepted.

N. Hot Piping: Install the fiber glass insulation with factory supplied jacket. Butt all joints firmly together and smoothly secure all jacket laps and joints strips with lap adhesive. Valves, fittings, etc. shall be insulated as specified in the Article 3.02.L.

O. Insulation and Protection at Points of Support

1. Install inserts made from rigid calcium silicate pipe insulation at all points of support. Inserts shall be not less than 12" long and of thickness equal to adjoining insulation. A jacket shall be installed over the insert with longitudinal laps and butt strips for circumferential joints smoothly secured with insulation adhesive. Jacket shall provide vapor barrier where required.

2. Install galvanized steel shields between supports and inserts. Shields shall be formed to fit the insulation and shall extend up to the centerline of the pipe and of the length specified for the inserts. Supports shall not pierce the insulation and all vapor barriers shall be unbroken and continuous.

3. In lieu of the foregoing methods, the use of factory fabricated saddle and shields specified in Section 230501 will be accepted.

R. Outdoor Piping

1. All exposed pipes shall be insulated in accordance with the hot or cold piping Paragraphs as required and shall further be protected with a weatherproof finish. Install aluminum, stainless steel, or laminated self-adhesive vapor barrier and weatherproofing jackets. Joints shall be sealed along the longitudinal seam and circumferential joints with butt strips, minimum 2" wide. Insulation shall be of the waterproof construction.

2. Fitting and valves shall be insulated with segments of the molded insulation and shall be covered using preformed aluminum or stainless steel fittings identical in composition to the jacket. All joints shall overlap 1" and shall be completely weather proof.

3.03 PROTECTION AND REPLACEMENT

A. Replace damaged insulation during construction that cannot be repaired satisfactorily, including units with vapor barrier damage and moisture saturated units.

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B. Protection: Insulation worker shall advise Contractor of required protection for insulation work during remainder of construction period, to avoid damage and deterioration.

3.04 SCHEDULE OF PIPE INSULATION

A. The following piping systems shall be insulated

1. Cold water, make-up water, supply and return piping for hot water systems. Bonnets of valves in hot water piping shall also be insulated.

2. Refrigerant piping.

B. Recommended Thickness: (per 2010 NYSECCC Table 503.2.8, based on insulation having a conductivity (k) not exceeding 0.27 BTU·in/ft²·°F·h)

Fluid	NOMINAL PIPE DIAMETER	
	<=1.5"	>1.5"
Hot Water/Dual Temp	1½"	2"
Refrigerant	1½"	1½"

END OF SECTION

SECTION 230702
EQUIPMENT INSULATION (HVAC)

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide thermal insulation on the equipment (HVAC) shown on the Drawings, specified herein and needed for a complete and proper installation. Product specific requirements are contained herein; Section 'General Conditions', shall be referred to for general requirements.

All insulation materials shall be free of asbestos.

1.02 RELATED SECTIONS

- A. Division 23 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Submit schedules showing manufacturer's product number, k-value, thickness and furnished accessories for each equipment requiring insulation.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

- A. Installer's Qualifications: Firm with at least three years successful installation experience on projects with mechanical insulations similar to that required for this Project.
- B. Code and Standards: Comply with NYC Construction Codes, ASHRAE Standards and New York City Energy Conservation Code **per Local Law 85/09** for materials and installation. All insulation materials shall be labeled in accordance with the identification requirements of MC 604.7 (at intervals not greater than 36 inches with the name of the manufacturer, the thermal resistance R-value at the specified installed thickness and the flame spread and smoke-developed indexes of the composite material) and shall have a flame spread index not more than 25 and a smoke developed index not more than 50 (per MC 604.3 and MC 604.5) when tested in accordance with ASTM E 84.

Testing of material and equipment shall be in accordance with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department

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(MEA) before the effective date of the NYC Construction Codes may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.

1.05 TEMPERATURE REQUIREMENT

- A. Apply adhesive, sealers, coating, and other items and accessories at the proper temperatures as recommended by the Manufacturer. If ambient conditions are not acceptable, provide temporary heat as required for proper installation without any delay to the Project completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Approved Manufacturers:

Knauf Fiber Glass.
Johns Manville
Owens-Corning Fiberglas Corp.
Approved equal

2.02 MATERIALS

- A. Adhesives and Sealants for Insulation: All sealants used on interior building insulation shall comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168; VOC limits shall comply with the limits indicated in Table 1 of LEED Version 2.2, Indoor Environmental Quality Section, Credit EQ-4.1. Those limits correspond to an effective date of the SCAQMD Rule #1168 of July 1, 2005, and Rule Amendment date of January 7, 2005.
- B. High density rigid fiber glass board insulation for equipment shall be ASTM C 612 Type IA or IB and shall have a thermal conductivity not exceeding 0.26 at 75 degrees F mean temperature. Block or board rigid fiber glass insulation for field applied **rectangular** breaching insulation shall have a density of 18.5 pcf and a thermal conductivity of 0.46 at 400 degrees F and shall be Type V, 2 inch thick per ASTM C 612 (Thermafiber K-FAC 19 or approved equal).
- C. Deleted.
- D. Jackets:
1. Provide pre-sized metal jacket except as otherwise shown on the Drawings. Metal jacketing shall be aluminum ASTM B 209, Alloys 1100, 30003, 3105 or 5005, Temper H14, 0.016 inch thick.

Factory pre-formed sectional pipe jacketing shall have a smooth outer finish with integral bonded laminated

polyethylene film - kraft moisture barrier underside, with Pittsburg or modified Pittsburg longitudinal lock seams. Joints shall have 2 inch overlapping circumferential joints sealed with 2 inch wide mastic backed aluminum snap bands.

Roll jacketing shall have a smooth outer finish with integral bonded laminated polyethylene film with kraft paper moisture barrier underside.

Sheet Jacketing shall be corrugated 1-1/4 inch x 1/4 inch deep with integral bonded laminated polyethylene film with kraft paper moisture barrier underside.

Metal jacketing fastener straps shall be Type 18-8 stainless steel, 0.020 inch thick, 1/2 inch wide.

2. Vapor barrier and weatherproofing jacket shall be a laminated five-ply self-adhesive material; temperature range: -30° F to 300° F; weather resistant; high puncture, tear resistant; product shall be used both indoors and outdoors; zero permeability; manufactured with mold inhibitors: VentureClad 1577CW-All Grade.
- E. Equipment Insulation Compounds: Provide adhesives, sealers, mastics and protective finishes as recommended by insulation manufacturer for applications indicated.
- F. Equipment Insulation Accessories: Provide staples, wire netting, tape, anchors and stud pins as recommended by insulation manufacturer for applications indicated.
- G. Cements:
1. Fibrous Glass Thermal Insulating Cement: Asbestos free; ASTM C 195
 2. Fibrous Glass Hydraulic Setting Thermal Insulating and Finishing Cement per ASTM C 449/C 449M.
- H. Wire and Bands:
1. Binding and Lacing Wire: Nickel copper alloy or copper clad steel, gauge as specified
 2. Bands: Galvanized steel, 1/2 inch wide x 0.015 inch thick, with 0.032 inch thick galvanized wing seals.
- I. Metal Corner Angles: galvanized steel, 2 x 2 inch 28 gauge

PART 3 - EXECUTION

3.01 COMPLETION OF TESTS

- A. Before applying the insulation, all tests specified in Division 15 Sections should have been completed. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to the Commissioner.

3.02 SUPPLEMENTAL INSTALLATION

- A. Install insulation materials with smooth and even surfaces and on clean and dry surfaces. Redo poorly fitted joints. Do not use mastic or joint sealer as filler for gaping joints and excessive voids resulting from poor workmanship.
- B. Insulation shall not be applied until the pumps and tanks has been connected, tested, and found to be operating satisfactorily. All surfaces of the pumps and tanks to be insulated shall be clean and dry.
- C. Do not insulate handholes, cleanouts, ASME stamp, and manufacturer's nameplate. Provide neatly beveled edge at interruptions of insulation.
- D. Provide removable insulation sections to cover parts of equipment which must be opened periodically for maintenance; include metal vessel covers, fasteners, flanges, frames and accessories.
- E. Equipment Exposed to Weather: Protect outdoor insulation from weather by installation of weather-barrier mastic protective finish, or laminated self-adhesive weatherproofing jacketing, as recommended by manufacturer.
- F. Deleted.
- G. Install equipment high-density Type IA or IB rigid fiberglass block or board. Insulation shall be held in place with No. 16 gauge soft annealed or galvanized steel wire. Joints and voids in the insulation shall be filled with mineral wool cement. Joints and breaks in the vapor barrier for cold equipment shall be sealed by applying vapor barrier coating. Finish shall consist of embedding open weave glass fabric (20 x 20) into a wet coating overlapping the seams at least 2". A finish coat shall then be applied to the entire insulated surface.
- H. **Rectangular** Boiler Smoke Breeching shall be insulated with Type V rigid fiber glass block or board in accordance with the following:
 - 1. Type V Rigid Fiber Glass Block or Board Insulation: Secure insulation in place with wire or galvanized steel bands unless otherwise specified.

Small Areas: Secure insulation with 16 gauge wire on maximum 6 inch centers

Large Areas: Secure insulation with 14 gauge wire or 0.015 inch thick by ½ inch wide galvanized steel bands on maximum 10 inch centers.

Stagger insulation joints. On irregular surfaces, where

application of block or board insulation is not practical, insulate with insulating cement built-up to same thickness as adjoining insulation. Fill joints, voids and irregular surfaces with insulating cement, to a uniform thickness.

Install aluminum roll jacketing on insulated surfaces of round smoke breeching. Install aluminum sheet jacketing on insulated surfaces of rectangular breeching.

Lap longitudinal and circumferential joints a minimum of 2 inches. Secure jacketing in place with $\frac{1}{2}$ inch by 0.020 inch thick stainless steel bands and stainless steel wing type seals, on maximum 12 inch centers. Terminate exposed ends of insulation with insulating cement trowelled down to metal surface on a bevel.

3.04 PROTECTION AND REPLACEMENT

- A. Replace damaged insulation during construction that cannot be repaired satisfactorily, including units with vapor barrier damage and moisture saturated units.
- B. Protection: Insulation shall be protected during the remainder of the construction period, to avoid damage and deterioration.

3.05 EXISTING INSULATION REPAIR

- A. Repair damaged sections of existing mechanical insulation, both previously damaged and damaged during construction. Use insulation of same thickness as existing insulation, install new jacket lapping and sealed over existing.
- B. Repair insulation with the same type of materials and thickness in building alteration work where existing equipment insulation is removed and/or damaged due to equipment repair or alteration.

3.06 SCHEDULES FOR EQUIPMENT INSULATION

- A. Hot Equipment (Above Ambient Temperature):

- 1. Air Separator Tanks

- Insulate each item of equipment specified above with the following type: Type IA or IB fibrous glass mineral fiber insulation 2" thick

- B. **Rectangular** Breeching between boiler outlet and chimney connection: Insulate breeching with 2" thick Type V rigid fiber glass block or board.

END OF SECTION

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SECTION 230703
DUCTWORK INSULATION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide thermal insulation on the ductwork installed and required on this Project shown on the Drawings, specified herein and needed for a complete and proper installation. Product specific requirements are contained herein; Section 230501, Basic HVAC Requirements, shall be referred to for general requirements.

All insulation materials shall be free of asbestos.

1.02 RELATED SECTIONS

- A. Division 23 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Submit schedule showing manufacturer's product number, k-value, thickness and furnished accessories for each duct system requiring insulation.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

- A. Installer's Qualifications: Firm with at least three years successful installation experience on projects with mechanical insulations similar to that required for this Project.
- B. Flame/Smoke Ratings: Provide mechanical insulation with flame spread index of 25 or less and smoke developed index of 50 or less, as tested by ASTM E-84 method and as defined in the NYC Mechanical Code. Insulation shall not flame, glow, smolder or smoke when tested in accordance with ASTM C 411 at the temperature to which they are exposed in service or a minimum of 250F per MC 604.3.
- C. Code and Standards: Comply with New York City Construction Code, New York State Energy Conservation Construction Code and ASHRAE Standards.
- D. Identification: External duct insulation and factory-insulated flexible duct shall be legibly printed or identified at intervals not greater than 36 inches with the name of the manufacturer, the thermal resistance R-value at the specified installed thickness and the flame spread and smoke-developed indexes of the composite material per MC 604.7.
- E. Testing of material and equipment shall be in accordance

with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department (MEA) before the effective date of the NYC Construction Codes may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Approved Manufacturers:

Knauf Fiber Glass.
Johns Manville
Owens-Corning Fiberglass Corp.
Or approved equal

2.02 MATERIALS

- A. Adhesives and Sealants for Insulation: All sealants used on interior building insulation shall comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168; VOC limits shall comply with the limits indicated in Table 1 of LEED Version 2.2, Indoor Environmental Quality Section, Credit EQ-4.1. Those limits correspond to an effective date of the SCAQMD Rule #1168 of July 1, 2005, and Rule Amendment date of January 7, 2005.
- B. Board Type: Fiberglass board: 3-lb minimum density, thermal conductivity not exceeding 0.23 at 75o F mean temperature, factory applied facing of aluminum foil reinforced with fiberglass yarn mesh and laminated to 40 lb kraft paper chemically treated to give the permanent flamespread and smoke-developed characteristics required. The use of plain (unfaced) fiberglass board on ductwork serving only as heating supply ducts is also acceptable.
- C. Flexible Type: Flexible (blanket) type fiberglass: 1-lb nominal density, thermal conductivity not exceeding 0.29 at 75o F mean temperature; factory applied foil reinforced kraft facing as specified for the fiberglass board.

- D. Asbestos free rigid hydrous calcium or magnesium silicate block shall be lightweight with thermal conductivity not exceeding 0.42 at 200° F mean temperature.
- E. Calcium-Magnesium-Silicate (CMS) Wool Wrap: CMS wool wrap blanket insulation shall be flexible, high temperature rated and shall have Omega Point Labs (OPL) or UL listing in accordance with ASTM E 2336 (or OTCR approval). The insulation blanket shall be fully encapsulated in an aluminum foil fiberglass reinforced scrim covering. Provide Unifrax Corporation FyreWrap E21.5; 3M Fire Barrier Duct Wrap15A; Thermal Ceramics FireMaster FastWrap+ or approved equal. Blanket insulation shall have NYC OTCR approval or Omega Point Labs (OPL) or UL listing in accordance with ASTM E 2336.
- F. Jackets for Ductwork Insulation: ASTM C-921; Type I for ductwork with temperatures below ambient; Type II for ductwork with temperatures above ambient. (Type I-Vapor Barrier, Type II-Water Vapor Permeable).
- G. Ductwork Insulation Accessories: Provide staples, bands, wires, tape, anchors, corner angles and all other items and accessories recommended by insulation manufacturer for applications indicated.
- H. Ductwork Insulation Compounds: Provide cements, adhesives, coatings, sealers, protective finishes and all other items and compounds recommended by insulation manufacturer for applications indicated.
- I. Vapor barrier and weatherproofing jacket shall be a laminated five-ply self-adhesive permanent acrylic system; suitable operating range from -30° F to 300° F; weather resistant; high puncture, tear resistant; product shall be used both indoors and outdoors; zero permeability; manufactured with mold inhibitors: VentureClad 1577CW-All Grade.

PART 3 - EXECUTION

3.01 COMPLETION OF TESTS

- A. Before applying the insulation, all tests specified in Division 23 Sections should have been completed. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to the City of New York.

3.02 SUPPLEMENTAL INSTALLATION

- A. Omit insulation if duct is internally lined with acoustic material of sufficient thermal conductivity providing a conductive resistance as required by the New York State Energy Conservation Construction Code. Materials used as

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internal insulation and exposed to the air stream in ducts shall be shown to be durable when tested in accordance with UL 181. Exposed internal insulation that is not impermeable to water shall not be used to line ducts or plenums from the exit of a cooling coil to the downstream end of the drain pan. (Reference MC 604.13). Omit insulation on ductwork where the design temperature difference between interior and exterior of duct does not exceed 15 degrees F (such as in return air plenums) per the 2007 NYSECCC Article E803.2.8.

- B. Duct coverings shall not penetrate a wall or floor required to have a fire resistance rating or required to be fireblocked per MC 604.6. Linings shall be interrupted at the area of operation of a fire damper and at a minimum of 6" upstream of and 6" downstream of electric resistance and fuel burning heaters in a duct system. Metal nosings or sleeves shall be installed over exposed duct liner edges that face opposite the direction of airflow per MC 604.8.
- C. Fiberglass board shall be used to insulate ductwork that is exposed in fan or equipment rooms or spaces where the design temperature difference between interior and exterior of duct exceeds 15 degrees F per the 2007 NYSECCC Article E803.2.8.
- D. Flexible type duct insulation shall be used to insulate ductwork which is installed in concealed spaces (hung ceilings, furred spaces, pipe and duct spaces, crawl spaces and tunnels) where the design temperature difference between interior and exterior of duct exceeds 15 degrees F per the 2007 NYSECCC Article E803.2.8.
- E. Facing and Finishing:
 - 1. Exposed Ducts: Insulation on ductwork exposed to view in Boiler Room, Boiler Room Area, Equipment and Mechanical Rooms, and shall have facing or finish as specified herein: Facing or finish shall be reinforced with metal corner beads and shall have a glass cloth finish installed in the following manner: Brush a full coat of lagging adhesive on all surfaces of the ductwork insulation. Imbed glass cloth in the wet coating, smoothing to avoid wrinkles. Overlap cloth seams 4", locating seams so as to be hidden from view, wherever practicable. Apply a second coat of lagging adhesive.
 - 2. Concealed Ducts: Insulation on warm air ductwork installed within pipe and duct spaces, storerooms, hung ceilings, furred spaces, or pipe tunnels shall have no additional finishing, other than the foil-reinforced-kraft facing. All cold air ductwork for the above spaces shall be provided with two coats of a

vapor retardant coating at least 1/16" thick with a layer of glass cloth in between or vapor barrier and weatherproofing jacket.

F. Installation of Board Type Insulation

1. Insulation shall be applied with edges tightly butted. It shall be impaled on pins welded to the duct and secured with speed clips impaled over the pins. Pins shall be cut off close to speed clips. On horizontal ducts, pins shall be spaced not less than one per square foot for the bottom surface, and not less than one per two square feet on the sides and top surface. On vertical ducts, the pins shall be spaced not less than one clip per two square feet of duct surface. For faced insulation, point all joints and cracks with vapor barrier coating, and seal all joints and speed clips with a 3" wide strip of foil-reinforced-kraft facing adhered with insulation adhesive. The use of pressure sensitive tape of the same facing material also is acceptable for this purpose. For cold air ductwork, the laminated self-adhesive vapor barrier and weatherproofing jacket will be accepted.
2. Where, because of space or size restriction, the welded pin method cannot be used, the use of stick clips will be approved and the insulation shall be additionally secured to the duct with insulation adhesive. The adhesive shall cover the entire surface of the sheet metal when applied to underside of horizontal duct, but may be applied in strips for application to top and sides with a minimum of 50% coverage. Insulation shall be additionally secured with No. 16 gage soft annealed galvanized steel wire on not more than 12" centers. Continuous metal, corner angles shall be used to protect edges of the insulation.

- G. Installation of Flexible Type Insulation: Flexible type insulation shall be cut slightly longer than the perimeter of the duct to insure full thickness at corners. Insulation shall be applied with edges tightly butted, and seams stapled approximately 6" on centers with outward clinching staples. Insulation shall be additionally secured with No. 16 gage soft annealed galvanized steel wire on not more than 12" centers. When the width of a horizontal duct is 24" or more, the insulation shall also be fastened with welded pins or stick clips spaced on 18" centers on the bottom surface of the duct. All joints and clips shall be taped and sealed with 3" wide strips of foil-reinforced-kraft facing applied with insulation adhesive. The use of pressure sensitive tape of the same facing material also is acceptable for this purpose. For cold air ductwork the laminated self-adhesive vapor barrier and weatherproofing jacket will be accepted.

- H. Insulation for Outdoor Ductwork: Outdoor ductwork shall be insulated with board type insulation having a vapor barrier consisting of two coats of a vapor retardant coating, at least 1/16th inch thick with a layer of glass cloth in between. After the insulation has been installed, it shall be covered with an aluminum jacket conforming to ASTM B209, 3003 alloy, H-14 temper, 0.020 inches thick with 1-1/4 inches corrugations or 0.032 inches thick with no corrugations. Jacket shall use lock joint or other approved system for a continuous weather tight system. A 2" overlap is required at longitudinal and circumferential joints. The use of vapor barrier and weatherproofing jacket in lieu of the vapor barrier coating and aluminum jacket will be accepted. Access doors and other items requiring maintenance or access shall be removable and sealable.
- I. Clean and dry ductwork prior to insulating. Butt insulation joints firmly together to ensure complete and tight fit over surfaces to be covered.
- J. Maintain integrity of vapor-barrier on ductwork insulation, and protect it to prevent puncture and other damage.
- K. Extend ductwork insulation without interruption through walls, floors and similar ductwork penetrations, except where otherwise indicated such as rated penetrations.

3.03 EXISTING INSULATION REPAIR

- A. Repair damaged or removed sections of existing duct insulation, both previously damaged/removed and damaged/removed during construction. Use insulation of same type and thickness as existing insulation, install new jacket lapping and sealed over existing.

3.04 PROTECTION AND REPLACEMENT

- A. Replace damaged insulation that cannot be repaired satisfactorily, including units with vapor barrier damage and moisture saturated units.
- B. Protection: Insulation Worker shall advise Contractor of required protection for insulation work during remainder of construction period, to avoid damage and deterioration.

3.05 SCHEDULES OF DUCTWORK INSULATION

- A. Insulation Omitted: Do not insulate the following:
1. Access door, test hole fittings, damper quadrants, except as otherwise specified. The adjoining insulation shall be neatly finished around such devices.

2. Exhaust ductwork need not be insulated, except the portion of the duct between motorized spill damper and spill louver.
- B. Exposed Ducts/Plenums in Boiler Room, Boiler Room Area, Equipment and Mechanical Rooms (Article applies to hot and cold ducts where the design temperature difference between interior and exterior of duct exceeds 15 degrees F per the 2007 NYSECCC Article E803.2.8.):
1. Insulate
 - a. All outside air intake plenums not pre-insulated at the factory.
 - b. Outdoor air intake ducts in their entirety.
 - c. Exhaust duct from motorized spill damper to spill louver.
 - d. Supply and return ducts
 - e. Heating plenums not pre-insulated at the factory
 2. Insulate the above with rigid fiberglass board, 2" thick.
- C. Insulate the following where the design temperature difference between interior and exterior of duct exceeds 15 degrees F per the 2007 NYSECCC Article E803.2.8:
1. Dual Temperature Ductwork: Concealed hot/cold supply and return ductwork between fan discharge or HVAC unit discharge and room terminal inlets and outlets.
 2. Insulate system specified above with the following:
 - a. Flexible Fiberglass: 2" thick, application limited to concealed locations.

END OF SECTION

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SECTION 230923
TEMPERATURE CONTROL SYSTEM WITH WEB-BASED BUILDING MANAGEMENT

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Furnish all labor, materials, equipment, and service necessary for a complete and operating Temperature Control System (TCS) and Building Management System (BMS), utilizing Direct Digital Controls as shown on the drawings and as described herein. Drawings are diagrammatic only.
- B. All labor, material, equipment and software not specifically referred to herein or on the plans, that is required to meet the functional intent of this specification, shall be provided without additional cost to the City of New York.

1.02 SYSTEM DESCRIPTION

- A. The entire Temperature Control System (TCS) shall be comprised of a network of interoperable, stand-alone digital controllers and/or of commercial programmable thermostats communicating via LonMark/LonTalk communication protocols to a Network Area Controller (NAC).
- B. The Building Management System (BMS) shall be comprised of Network Area Controller or Controllers (NAC) within the facility. The NAC shall connect to the City of New York local area network. Access to the system shall be accomplished through standard Web browsers, via the Internet and local area network. Each NAC shall communicate to LonMark/LonTalk (IDC) controllers and other open protocol systems/devices.
- C. The Building Management System (BMS) as provided in this Division shall be based on the Honeywell WEBS System incorporating the Niagara Framework™.

Other acceptable BMS manufacturers:

- 2. Trane Tracer SM
- 3. Approved equal compatible with new and existing DDC controllers as described on Dwg. M-008.

1.03 GENERAL

- A. The Temperature Control System (TCS) and Building Management System (BMS) shall be comprised of a network of interoperable, stand-alone digital controllers and/or communicating thermostats, a computer system, graphical user interface software, network devices, valves, dampers, sensors, and other devices as specified herein.

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- B. The installed system shall provide secure password access to all features, functions and data contained in the overall BMS.

1.04 SUBMITTAL

- A. Five copies of shop drawings of the components and devices for the entire control system shall be submitted and shall consist of a complete list of equipment and materials, including manufacturers catalog data sheets and installation instructions for all controllers, valves, dampers, sensors, etc. Shop drawings shall also contain complete wiring and schematic diagrams, software descriptions, calculations, and any other details required to demonstrate that the system has been coordinated and will properly function as a system. Terminal identification for all control wiring shall be shown on the shop drawings. A complete written Sequence of Operation shall also be included with the submittal package. Catalog data sheets, wiring diagrams and point lists shall be provided for proper coordination of work.
- B. Submittal shall also include a complete point list of all points to be connected to the TCS and BMS, protocol documentation, and factory support information for systems provided and integrated into the BMS.
- C. Submittal shall also include a copy of each of the graphics developed for the Graphic User Interface including a flowchart (site map) indicating how the graphics are to be linked to one another for system navigation. The graphics are intended to be 80% - 90% complete at this stage with the only remaining changes to be based on review comments from the A/E design team and/or City of New York.
- D. Upon completion of the work, provide a complete set of 'as-built' drawings and application software on compact disk. Drawings shall be provided as AutoCAD™ compatible files. Five copies of the 'as-built' drawings shall be provided in addition to the documents on compact disk.

1.05 SPECIFICATION NOMENCLATURE

- A. Acronyms used in this specification are as follows:
- | | |
|-----|----------------------------|
| BMS | Building Management System |
| TCS | Temperature Control System |

NAC	Network Area Controller
IDC	Interoperable Digital Controller
GUI	Graphical User Interface
WBI	Web Browser Interface
DDC	Direct Digital Controls
LAN	Local Area Network
OOT	Object Oriented Technology

1.06 CONTRACTOR'S RESPONSIBILITIES

- A. The contractor shall be responsible for all controllers, thermostats, control devices, control panels, controller programming, controller programming software, controller input/output, low voltage power wiring and controller network wiring.
- B. The contractor shall be responsible for the Network Area Controller(s) (NAC), software and programming of the NAC, graphical user interface software (GUI), development of all graphical screens, Web browser pages, setup of schedules, logs and alarms, LonWorks network management and connection of the NAC to the local area network.

1.07 RELATED WORK SPECIFIED ELSEWHERE

- A. Electrical:
 - 1. Providing motor starters and disconnect switches (unless otherwise noted).
 - 2. Power wiring and conduit (unless otherwise noted).
 - 3. Provision, installation and wiring of smoke detectors (unless otherwise noted).
 - 4. Other equipment and wiring.

1.08 SOFTWARE LICENSE AGREEMENT

- A. The City of New York /HSA shall agree to the manufacturer's standard software and firmware licensing agreement as a condition of this contract. Such license shall grant use of all programs and application software to City of New York as defined by the manufacturer's license agreement, but shall protect manufacturer's rights to disclosure of trade secrets contained within such software.

- B. The City of New York shall be the named license holder of all software associated with any and all incremental work on the project(s). In addition, the City of New York shall receive usership of all job specific configuration documentation, data files, and application-level software developed for the project. This shall include all custom, job specific software code and documentation for all configuration and programming that is generated for a given project and/or configured for use with the NAC, BMS Server(s), and any related LAN / Intranet and Internet connected routers and devices. Any and all required IDs and passwords for access to any component or software program shall be provided to the City of New York.

1.09 DELIVERY, STORAGE AND HANDLING

- A. Provide factory-shipping cartons for each piece of equipment and control device. Maintain cartons through shipping, storage and handling, as required to prevent equipment damage. Store equipment and materials inside and protected from weather.

PART 2 - MATERIALS

2.01 OPEN, INTEROPERABLE, INTEGRATED ARCHITECTURES

- A. The intent of this specification is to provide a peer-to-peer networked, stand-alone, distributed control system with the capability to integrate LonWorks technology and other open and proprietary communication protocols in one open, interoperable system.
- B. The supplied computer software shall employ object-oriented technology (OOT) for representation of all data and control devices within the system. In addition, adherence to industry standards including ANSI / ASHRAE™ Standard 135-2001, BACnet and LonMark to assure interoperability between all system components is required.
- C. All components and controllers supplied under this Division shall be true "peer-to-peer" communicating devices. Components or controllers requiring "polling" by a host to pass data shall not be acceptable.
- D. The supplied system must incorporate the ability to access all data using standard Web browsers without requiring proprietary operator interface and configuration programs. An Open DataBase Connectivity (ODBC) or Structured Query Language (SQL) compliant server database is required for all system database parameter storage. This data shall reside on a supplier-installed server for all database access.

Systems requiring proprietary database and user interface programs shall not be acceptable.

- E. A hierarchical topology is required to assure reasonable system response times and to manage the flow and sharing of data without unduly burdening the customer's internal Intranet network. Systems employing a "flat" single tiered architecture shall not be acceptable.
1. Maximum acceptable response time from any alarm occurrence (at the point of origin) to the point of annunciation shall not exceed 5 seconds for network connected user interfaces.
 2. Maximum acceptable response time from any alarm occurrence (at the point of origin) to the point of annunciation shall not exceed 60 seconds for remote or dial-up connected user interfaces.

2.02 NETWORKS

- A. The Local Area Network (LAN) shall be a 100 Megabits/sec Ethernet network supporting Java®, XML, HTTP, and SOAP for maximum flexibility for integration of building data with enterprise information systems and providing support for multiple Network Area Controllers (NACs), workstations and, if specified, a local server.
- B. LAN minimum physical and media access requirements:
1. Ethernet; IEEE standard 802.3.
 2. Cable; 100 Base-T, UTP-8 wire, category 5.
 3. Minimum throughput; 100 Mbps.

2.03 NETWORK ACCESS

- A. Remote Access.
1. For Local Area Network (LAN) installations, provide access to the LAN from a remote location, via the Internet. The City of New York shall provide a connection to the Internet to enable this access via high-speed cable modem, asynchronous digital subscriber line (ADSL) modem, ISDN line, T1 Line or via the customer's Intranet to a corporate server providing access to an Internet Service Provider (ISP).

2.04 NETWORK AREA CONTROLLER (NAC)

- A. The Contractor shall supply one or more Network Area Controllers (NAC) as part of the contract. Number of

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area controllers required is dependent on the type and quantity of devices. It is the responsibility of the contractor to determine the quantity and type of devices.

- B. The Network Area Controller (NAC) shall provide the interface between the LAN and the field control devices, and provide global supervisory control functions over the control devices connected to the NAC. It shall be capable of executing application control programs to provide:
 - 1. Calendar functions
 - 2. Scheduling
 - 3. Trending
 - 4. Alarm monitoring and routing
 - 5. Time synchronization
 - 6. Integration of LonWorks controller data and BACnet controller data
 - 7. Network Management functions for all LonWorks based devices
- C. The Network Area Controller must provide the following hardware features as a minimum:
 - 1. One Ethernet Port - 10/100 Mbps
 - 2. One RS-232 port
 - 3. One LonWorks Interface Port - 78KB FTT-10A
 - 4. One RS-485 ports
 - 5. Battery Backup
 - 6. Flash memory for long term data backup (If battery backup or flash memory is not supplied, the controller must contain a hard disk with at least 1 gigabyte storage capacity)
 - 7. The NAC must be capable of operation over a temperature range of 32 to 122°F
 - 8. The NAC must be capable of withstanding storage temperatures of between 0 and 158°F
 - 9. The NAC must be capable of operation over a humidity range of 5 to 95% RH, non-condensing.
- D. The NAC shall provide multiple user access to the system and support for ODBC or SQL. A database resident on the NAC shall be an ODBC-compliant database or must provide an ODBC data access mechanism to read and write data stored within it.
- E. The NAC shall support standard Web browser access via the Intranet/Internet. It shall support a minimum of 32 simultaneous users.
- F. Event Alarm Notification and actions:

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1. The NAC shall provide alarm recognition, storage; routing, management, and analysis to supplement distributed capabilities of equipment or application specific controllers.
 2. The NAC shall be able to route any alarm condition to any defined user location whether connected to a local network or remote via dial-up telephone connection, or wide-area network.
 3. Alarm generation shall be selectable for annunciation type and acknowledgement requirements including but limited to:
 - a. To alarm
 - b. Return to normal
 - c. To fault
- G. Control equipment and network failures shall be treated as alarms and annunciated.
- H. Alarms shall be annunciated in any of the following manners as defined by the user:
1. Screen message text
 2. Email of the complete alarm message to multiple recipients. Provide the ability to route and email alarms based on:
 - a. Day of week
 - b. Time of day
 - c. Recipient
 3. Pagers via paging services that initiate a page on receipt of email message
 4. Graphic with flashing alarm object(s)
 5. Printed message, routed directly to a dedicated alarm printer
- I. The following shall be recorded by the NAC for each alarm (at a minimum):
1. Time and date
 2. Location (building, floor, zone, office number, etc.)
 3. Equipment (air handler #, accessway, etc.)
 4. Acknowledge time, date, and user who issued acknowledgement.
 5. Number of occurrences since last acknowledgement.
- J. Alarm actions may be initiated by user defined programmable objects created for that purpose.
- K. Defined users shall be given proper access to acknowledge any alarm, or specific types or classes of alarms defined by the user.

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- L. A log of all alarms shall be maintained by the NAC and/or a server (if configured in the system) and shall be available for review by the user.
- M. Provide a "query" feature to allow review of specific alarms by user defined parameters.
- N. A separate log for system alerts (controller failures, network failures, etc.) shall be provided and available for review by the City of New York.
- O. An Error Log to record invalid property changes or commands shall be provided and available for review by the City of New York.
- P. The NAC shall be Honeywell WEB-301 or approved equal.

2.05 DATA COLLECTION AND STORAGE

- A. The NAC shall have the ability to collect data for any property of any object and store this data for future use.
- B. The data collection shall be performed by log objects, resident in the NAC that shall have, at a minimum, the following configurable properties:
 - 1. Designating the log as interval or deviation.
 - 2. For interval logs, the object shall be configured for time of day, day of week and the sample collection interval.
 - 3. For deviation logs, the object shall be configured for the deviation of a variable to a fixed value. This value, when reached, will initiate logging of the object.
 - 4. For all logs, provide the ability to set the maximum number of data stores for the log and to set whether the log will stop collecting when full, or rollover the data on a first-in, first-out basis.
 - 5. Each log shall have the ability to have its data cleared on a time-based event or by a user-defined event or action.
- C. All log data shall be stored in a relational database in the NAC and the data shall be accessed from a server (if the system is so configured) or a standard Web browser.
- D. All log data, when accessed from a server, shall be capable of being manipulated using standard SQL statements.
- E. All log data shall be available to the City of New York in the following data formats:
 - 1. HTML
 - 2. XML

3. Plain Text
 4. Comma or tab separated values
- F. The NAC shall have the ability to archive its log data either locally (to itself), or remotely to a server or other NAC on the network. Provide the ability to configure the following archiving properties, at a minimum:
1. Archive on time of day
 2. Archive on user-defined number of data stores in the log (buffer size)
 3. Archive when log has reached it's user-defined capacity of data stores
 4. Provide ability to clear logs once archived.

2.06 AUDIT LOG

- A. Provide and maintain an Audit Log that tracks all activities performed on the NAC. Provide the ability to specify a buffer size for the log and the ability to archive log based on time or when the log has reached its user-defined buffer size. Provide the ability to archive the log locally (to the NAC), to another NAC on the network, or to a server. For each log entry, provide the following data:
1. Time and date
 2. User ID
 3. Change or activity: i.e., Change setpoint, add or delete objects, commands, etc.

2.07 DATABASE BACKUP AND STORAGE

- A. The NAC shall have the ability to automatically backup its database. The database shall be backed up based on a user-defined time interval.
- B. Copies of the current database and, at the most recently saved database shall be stored in the NAC. The age of the most recently saved database is dependent on the user-defined database save interval.
- C. The NAC database shall be stored, at a minimum, in XML format to allow for user viewing and editing, if desired. Other formats are acceptable as well, as long as XML format is supported.

2.08 INTEROPERABLE DIGITAL CONTROLLER (IDC)

- A. Controls shall be microprocessor based Interoperable LonWorks Controllers (IDC).
- B. HVAC control shall be accomplished using LonMark™ based devices where the application has a LonMark profile defined.

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- C. The contractor shall run the LonWorks network trunk to the nearest Network Area Controller (NAC). Coordinate locations of the NAC to ensure that maximum network wiring distances, as specified by the LonWorks wiring guidelines, are not exceeded. A maximum of 126 devices may occupy any one LonWorks trunk and must be installed using the appropriate trunk termination device. All LonWorks and LonMark devices must be supplied using FTT-10A LonWorks communications transceivers.
- D. The Network Area Controller (NAC) will provide all scheduling, alarming, trending, and network management for the LonMark / LonWorks based devices.
- E. The IDCs shall communicate with the NAC at a baud rate of not less than 78.8K baud. The IDC shall provide LED indication of communication and controller performance to the technician, without cover removal.
- F. The contractor supplying the IDC's shall provide documentation for each device, with the following information at a minimum:
 - 1. Network Variable Inputs (nvi's); name and type
 - 2. Network Variable Outputs (nvo's); name and type
 - 3. Network configuration parameters (nci, nco); name and type
- G. It is the responsibility of the contractor to ensure that the proper Network Variable Inputs and Outputs (nvi and nvo) are provided in each IDC, as required by the point charts.
- H. The supplier of any programmable IDC shall provide one copy of the manufacturer's programming tool, with documentation, to the City of New York.

2.09 WEB BROWSER CLIENTS

- A. The system shall be capable of supporting an unlimited number of clients using a standard Web browser such as Internet Explorer™. Systems requiring additional software (to enable a standard Web browser) to be resident on the client machine, or manufacture-specific browsers shall not be acceptable.
- B. The Web browser software shall run on any operating system and system configuration that is supported by the Web browser. Systems that require specific machine requirements in terms of processor speed, memory, etc., in order to allow the Web browser to function with the BMS, shall not be acceptable.
- C. The Web browser shall provide the same view of the system, in terms of graphics, schedules, calendars, logs, etc., and provide the same interface methodology as is provided by the Graphical user Interface. Systems that require different views or that require different means of interacting with objects such as schedules, or logs, shall not be permitted.

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- D. The Web browser client shall support at a minimum, the following functions:
1. User log-on identification and password shall be required. If an unauthorized user attempts access, a blank web page shall be displayed. Security using Java authentication and encryption techniques to prevent unauthorized access shall be implemented.
 2. Graphical screens developed for the GUI shall be the same screens used for the Web browser client. Any animated graphical objects supported by the GUI shall be supported by the Web browser interface.
 3. HTML programming shall not be required to display system graphics or data on a Web page. HTML editing of the Web page shall be allowed if the user desires a specific look or format.
 4. Storage of the graphical screens shall be in the Network Area Controller (NAC), without requiring any graphics to be stored on the client machine. Systems that require graphics storage on each client are not acceptable.
 5. Real-time values displayed on a Web page shall update automatically without requiring a manual "refresh" of the Web page.
 6. Users shall have administrator-defined access privileges. Depending on the access privileges assigned, the user shall be able to perform the following:
 - a. Modify common application objects, such as schedules, calendars, and set points in a graphical manner.
 1. Schedule times will be adjusted using a graphical slider, without requiring any keyboard entry from the operator.
 2. Holidays shall be set by using a graphical calendar, without requiring any keyboard entry from the operator.
 - b. Commands to start and stop binary objects shall be done by right-clicking the selected object and selecting the appropriate command from the pop-up menu. No entry of text shall be required.
 - c. View logs and charts
 - d. View and acknowledge alarms
 - e. Setup and execute SQL queries on log and archive information
 7. The system shall provide the capability to specify a user's (as determined by the log-on City

of New York identification) home page. Provide the ability to limit a specific user to just their defined home page. From the home page, links to other views, or pages in the system shall be possible, if allowed by the system administrator.

8. Graphic screens on the Web Browser client shall support hypertext links to other locations on the Internet or on Intranet sites, by specifying the Uniform Resource Locator (URL) for the desired link.

2.10 SYSTEM PROGRAMMING

- A. The Graphical User Interface software (GUI) shall provide the ability to perform system programming and graphic display engineering as part of a complete software package. Access to the programming functions and features of the GUI shall be through password access as assigned by the system administrator.
- B. A library of control, application, and graphic objects shall be provided to enable the creation of all applications and user interface screens. Applications are to be created by selecting the desired control objects from the library, dragging or pasting them on the screen, and linking them together using a built in graphical connection tool. Completed applications may be stored in the library for future use. Graphical User Interface screens shall be created in the same fashion. Data for the user displays is obtained by graphically linking the user display objects to the application objects to provide "real-time" data updates. Any real-time data value or object property may be connected to display its current value on a user display. Systems requiring separate software tools or processes to create applications and user interface displays shall not be acceptable.
- C. Programming Methods
 1. Provide the capability to copy objects from the supplied libraries, or from a user-defined library to the user's application. Objects shall be linked by a graphical linking scheme by dragging a link from one object to another. Object links will support one-to-one, many-to-one, or one-to-many relationships. Linked objects shall maintain their connections to other objects regardless of where they are positioned on the page and shall show link identification for links to objects on other pages for easy identification. Links will vary in color depending on the type of link; i.e., internal, external, hardware, etc.
 2. Configuration of each object will be done through the object's property sheet using fill-in the blank fields, list boxes, and selection buttons. Use of custom programming, scripting language, or

a manufacturer-specific procedural language for configuration will not be accepted.

3. The software shall provide the ability to view the logic in a monitor mode. When on-line, the monitor mode shall provide the ability to view the logic in real time for easy diagnosis of the logic execution. When off-line (debug), the monitor mode shall allow the user to set values to inputs and monitor the logic for diagnosing execution before it is applied to the system.
4. All programming shall be done in real-time. Systems requiring the uploading, editing, and downloading of database objects shall not be allowed.
5. The system shall support object duplication within a customer's database. An application, once configured, can be copied and pasted for easy re-use and duplication. All links, other than to the hardware, shall be maintained during duplication.

2.11 OBJECT LIBRARIES

- A. A standard library of objects shall be included for development and setup of application logic, user interface displays, system services, and communication networks.
- B. The objects in this library shall be capable of being copied and pasted into the user's database and shall be organized according to their function. In addition, the user shall have the capability to group objects created in their application and store the new instances of these objects in a user-defined library.
- C. In addition to the standard libraries specified here, the supplier of the system shall maintain an on-line accessible (over the Internet) library, available to all registered users to provide new or updated objects and applications as they are developed.
- D. All control objects shall conform to the control objects specified in the BACnet specification.

2.12 OTHER CONTROL SYSTEM HARDWARE

- A. Space Temperature Wall Module.
 1. Wall module shall have a 20K Ohm NTC thermistor temperature sensor with operating range of 45 to 99 F under a locking cover/enclosure with UL 916 listing designed for mounting on a standard electrical switch box.
 2. Space temperature sensors shall be accurate to plus or minus one F degree.

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- B. Control Valves: Control valves shall be 2-way or 3-way pattern as shown constructed for tight shutoff and shall operate satisfactory against system pressures and differentials.
1. Two-position valves shall be 'line' size. Proportional control valves shall be sized for a maximum pressure drop of 5.0 psi at rated flow (except as may be noted on the drawings).
 2. Two-way water valves shall have equal percentage flow characteristics and three-way valves shall have equal percentage flow characteristics straight through and linear through the bypass.
 3. Provide valve position indicator on all valves. Leakage rate shall be no more than 0.05% of Cv.
 4. Valves 1/2 inch through 1 1/2 inch shall be screwed pattern except where solder connections are specified for valves 1/2 or 3/4 inches.
 5. Three-way valves bypass port shall be of one size reduced Cv to preclude the need for a bypass port balancing valve.
 6. Valve and cartridge replacement tool shall be configured for maintenance or replacement without draining the coil to prevent water spill; however, an integral isolation valve on the control valve outlet will also be acceptable.
 7. Two inch valves shall be "screwed" configuration and 2-1/2 inch and larger valves shall be "flanged" configuration and ANSI-rated to withstand the pressures and temperatures encountered.
- C. Duct Mount, Pipe Mount and Outside Air Temperature Sensors: Temperature sensors with an accuracy of $\pm 0.3^{\circ}$ F.
1. Outside air sensors shall include an integral sun shield.
 2. Duct sensors shall have sensor approximately in center of the duct, and shall have selectable lengths of 6, 12, and 18 inches.
 3. Multipoint averaging element sensors shall be provided where specified and shall have a minimum of one foot of sensor length for each square foot of duct area (provide multiple sensors if necessary).
 4. Pipe mount sensors shall have copper, or stainless steel separable wells.
- D. Current Sensitive Switches: Solid state, split core current switch that operates when the current level (sensed by the internal current transformer) exceeds the adjustable trip point shall be provided where specified. Current switches shall include an integral

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- LED for indication of trip condition and a current level below trip set point.
- E. Low Temperature Limit Switches. Safety low limit shall be manual reset twenty foot limited fill type responsive to the coolest section of its length.
- F. High Temperature Limit Switches. Safety high limit (firestats) shall be manual reset type.
- G. Humidity Sensors.
1. Duct and room sensors shall have a sensing range of 5% to 95%.
 2. Duct sensors shall be provided with a sampling chamber.
 3. Outdoor air humidity sensors shall have a sensing range of 20% to 95% RH. They shall have a compensated ambient temperature range of -40°F to 170° F.
- H. Enthalpy Sensors. Duct mounted enthalpy sensor shall include a temperature sensor and a humidity sensor constructed to close an electrical contact upon a drop in enthalpy (total heat) to enable economizer modes of operation where specified.
- I. Actuators, General.
1. All automatically controlled devices, unless specified otherwise elsewhere, shall be provided with actuators sized to operate their appropriate loads with sufficient reserve power to provide smooth modulating action or two-position action and tight close-off. Valves shall be provided with actuators suitable for floating or analog signal control as required to match the controller output. Actuators shall be power failure return type where valves or dampers are required to fail to a safe position and where specified.
- J. Temperature Control Panels: Furnish temperature control panels of code gauge steel with locking doors for mounting all devices. All electrical devices within a control panel shall be factory wired. All external wiring shall be connected to terminal strips mounted within the panel. Provide engraved phenolic nameplates identifying all devices mounted on the face of control panels. A complete set of 'as-built' control drawings (relating to the controls within that panel) shall be furnished within each control panel.

2.13 ELECTRICAL CONTROL POWER AND LOW VOLTAGE WIRING

- A. Provide interlock wiring between supply and return fans and electrical wiring for relays for temperature and pressure indication. Do not provide interlock wiring if a dedicated digital output has been specified for the equipment or the sequence of operation requires independent start/stop.
- B. Provide control wiring, conduit and connections for low temperature thermostats, high temperature thermostats, alarms, flow switches, actuating devices, control devices for temperature, pressure and flow indication, and point resets for the LonWorks BMS/DDC control system.
- C. Provide all other wiring required for the complete operation of the LonWorks BMS/DDC control system. This includes but is not limited to:
 - 1. Where 24VAC power is not provided as an integral part of the equipment, provide control power wiring between 120 volt AC/24 volt AC power transformers to LonWorks control components requiring 24 volts power for operation.
 - 2. 78 Kilo Baud Twisted pair Local Operating Network wiring (TP/FTT-10).
- D. Install all wiring raceway systems complying with the requirements of the National Electrical Code, and New York City Code. All corridor installations shall be installed in the Cable Tray or EMT. Provide EMT sleeves from the cable tray through the walls to above ceiling areas. Secured free air plenum rated cable is allowed to be run above the ceiling areas.
- E. LonWorks Network Communication Requirements
 - 1. Wired network communication shall be via channels consisting of a 24 AWG twisted pair installed in a 3/4" EMT or cable tray.
 - 2. Communication conduits shall not be installed closer than six feet from high power transformers or run parallel within six feet of electrical high power cables. Care shall be taken to route the cable as far from interference generating devices as possible.
 - 3. All shields shall be ground (earth ground) at one point only, to eliminate ground loops. This grounding shall be within the enclosure.
 - 4. There shall be no power wiring, in excess of 30 VAC rms, run in conduit with communications

wiring. In cases where signal wiring is run in conduit with communication wiring, all communication wiring and signal wiring shall be run using separate twisted shielded pairs with the shields grounded in accordance with the manufacturer's wiring practices.

F. Input/Output Signal Control Wiring

1. RTD wiring shall be three-wire or four-wire twisted, shielded, minimum number 22 gauge.
2. Digital Input and Output wiring shall be a minimum of number 18 gauge.
3. Analog Input and Output control functions shall be a minimum of number 18 gauge, twisted, shielded.
4. Thermistors shall be equipped with the manufacturers' calibrated lead wiring. This lead wire shall not be trimmed.

G. Low Voltage (24VAC) Power Wiring

1. Low voltage (24VAC) power wiring shall be minimum two-wire twisted AWG 16-2. Provide low voltage 24V AC power to each LON controller, as required, from 110V/24VAC transformers to provide 24VAC low voltage control power. Provide the required number of transformers based on the power requirements of each LonWorks controller.
2. Low voltage power wiring that exceeds 30 VAC shall be run separate from the LON communications twisted pair (TP/FT-10) LON wiring.

H. Low Voltage (24 VAC/VDC) Power and Signal Wiring

1. Low voltage power wiring (24 VAC) shall be minimum two-conductor stranded AWG 18 and sized for the amperage required. Low voltage signal wiring (0-10 VDC) shall be minimum two-conductor stranded AWG 18 and sized for the amperage required. Low voltage wiring may be combined within one cable if acceptable to the practices of the manufacturer to which the cable is connected.

I. Control Transformers (120Volt/24VAC)

The Contractor shall provide control transformers conforming to the following specifications:

1. Single-phase general purpose.
2. Dry type, two winding type, self-cooled.

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3. Ratings and quantities complying with the control system requirements and in conformance to:
 - a. New York City Code Requirements
4. Manufactured and tested in accordance with the latest applicable ANSI, NEMA, and IEEE Standards. UL listed and bear the UL label.
5. Control transformers shall be designed for continuous operation at rated kVA with normal life expectancy per ANSI C57.96.
6. Each transformer shall be over-current protected through the use of either a fuse or circuit breaker.

J. Conduit and Fittings

1. Where conduit is utilized for Control Wiring, Control Cable or Transmission Cable: Electrical metallic tubing (EMT) shall be provided with compression fittings. Conduit shall be cold rolled steel, zinc coated or zinc-coated rigid steel with threaded connections.
2. Outlet Boxes: Hot-dipped galvanized drawn steel suited to each application, in general, four inches square or octagon with suitable raised cover.
3. Pull and Junction Boxes: Size according to number, size, and position of entering raceway as required by National Electrical Codes. Enclosure type shall be suited to location.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. All work described in this section shall be performed by system integrators or contractors that have a successful history in the design and installation of integrated control systems. The installing office shall have a minimum of three years of integration experience and shall provide documentation in the submittal package verifying the company's experience.
- B. Install system and materials in accordance with manufacturer's instructions, and as detailed on the project drawing set.
- C. Drawings of the TCS and BMS network are diagrammatic only and any apparatus not shown, but required to make

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the system operative to the complete satisfaction of the Commissioner shall be furnished and installed without additional cost.

- D. Line and low voltage electrical connections to control equipment shown specified or shown on the control diagrams shall be furnished and installed by the Contractor in accordance with these specifications.
- E. Equipment shall be furnished completely wired. Control wiring will be furnished and installed by the Contractor.

3.02 WIRING

- A. All low voltage electrical control wiring to the control panels, NAC, computers and network components shall be the responsibility of the Contractor.
- B. The Contractor shall furnish all power wiring to control panels, electrical starters and motors.

3.03 WARRANTY

- A. Equipment, materials and workmanship incorporated into the work shall be warranted for a period of one (1) year from the time of system acceptance.
- B. Within this period, upon notice by the City of New York, any defects in the work provided under this section due to faulty materials, methods of installation or workmanship shall be promptly (within 48 hours after receipt of notice) repaired or replaced by the Contractor at no expense to the City of New York.

3.04 WARRANTY ACCESS

- A. The City of New York shall grant to the Contractor, reasonable access to the TCS and BMS during the warranty period.
- B. The City of New York shall allow the contractor to access the TCS and BMS from a remote location for the purpose of diagnostics and troubleshooting, via the Internet, during the warranty period.

3.05 SOFTWARE LICENSE

- A. The City of New York shall be the named license holder of all software associated with any and all incremental work on the project(s).
- B. The City of New York, or the appointed agent, shall receive usership of all job specific software configuration documentation, data files, and application-level software developed for the project. This shall include all custom, job specific software

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code and documentation for all configuration and programming that is generated for a given project and /or configured for use within Niagara Framework (Niagara) based controllers. Any and all required Ids and passwords for access to any component or software program shall be provided to the City of New York.

3.06 ACCEPTANCE TESTING

- A. Upon completion of the installation, the Contractor shall load all system software and start-up the system. This contractor shall perform all necessary calibration, testing and de-bugging and perform all required operational checks to insure that the system is functioning in full accordance with these specifications.
- B. This contractor shall perform tests to verify proper performance of components, routines, and points. Repeat tests until proper performance results. This testing shall include a point-by-point log to validate 100% of the input and output points of the DDC system operation.
- C. Upon completion of the performance tests described above, repeat these tests, point by point as described in the validation log above in presence of Commissioner, as required. Properly schedule these tests so testing is complete at a time directed by the Commissioner.
- D. System Acceptance: Satisfactory completion is when the contractor have performed successfully all the required testing to show performance compliance with the requirements of the Contract Documents to the satisfaction of the Commissioner. System acceptance shall be contingent upon completion and review of all corrected deficiencies.

3.07 OPERATOR INSTRUCTION, DEMONSTRATION

- A. During system commissioning and at such time acceptable performance of the TCS and BMS hardware and software has been established the Contractor shall provide on-site operator instruction to the City of New York operating personnel. Operator instruction shall be done during normal working hours and shall be performed by a competent representative familiar with the system hardware, software and accessories.
- B. The Contractor shall provide 40 hours of instruction to the City of New York designated personnel on the operation of the TCS and BMS and describe its intended use with respect to the programmed functions specified. Operator orientation of the systems shall include, but not be limited to; the overall operation program, equipment functions (both individually and as part of the total integrated system), commands, systems generation, advisories, and appropriate operator intervention required in responding to the System's operation.
- C. The training shall be in three sessions as follows:
1. Initial Training: One day session (8 hours) after system is started up and at least one week before first acceptance test. Manual shall have been submitted at least two weeks prior to training so that the City of New York personnel can start to familiarize themselves with the system before classroom instruction begins.
 2. First Follow-Up Training: Two days (16 hours total) approximately two weeks after initial training, and before Formal Acceptance. These sessions will deal with more advanced topics and answer questions.
 3. Warranty Follow Up: Two days (16 hours total) in no less than 4 hour increments, to be scheduled at the request of the City of New York during the one year warranty period. These sessions shall cover topics as requested by the City of New York such as; how to add additional points, create and gather data for trends, graphic screen generation or modification of control routines.

PART 4 - POINTS LIST

4.01 CONSTANT VOLUME AIR HANDLING UNIT (AHU)

- A. Supply Fan
1. Start/Stop and Status (DO/DI)
- B. Return Fan

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1. Start/Stop and Status (DO/DI)
- C. Damper Control
 1. Outdoor Air Damper (AO)
 2. Return Air Damper (AO)
 3. Spill Air Damper (AO)
 4. Outdoor Air Temperature (AI)
 5. Mixed Air Temperature (AI)
- D. Heating Coil
 1. Control Valve (AO)
 2. Pump Start/Stop and Status (DO/DI)
 3. Freezestat (DI)
- E. Cooling Coil
 1. DX Coil Stages (BO each stage)
- F. Discharge Air Temperature (AO)
- G. Return Air Temperature (AI)
- H. Air Filter Pressure Drop (AI)
- I. Smoke Detector (DI each detector)

4.02 BOILER AND HOT WATER SYSTEM

- A. Boiler
 1. Control Panel Enable (DO)
 2. Run Status (DI)
 3. Boiler Alarm (DI)
 4. Leaving Water Temperature (AI)
 5. Return Water Temperature (AI)
 6. Outdoor Air Temperature (AI)
- B. Hot Water System
 1. Space Temperature
 2. Pump Start/Stop and Status (DO/DI each pump)

END OF SECTION

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SECTION 230993
SEQUENCE OF OPERATION

PART 1 - GENERAL

1.01. DESCRIPTION OF WORK

- A. The sequence of operation is hereby defined as the written manner and method by which HVAC systems and other building systems and equipment operate. This description includes automatic and manual control functions and includes operation(s), which are monitored, observed, trended, etc. and otherwise used to make decisions regarding system operation.
- B. Operating equipment, devices, and system components required for control systems are also specified in other Division 23 Sections. Specific requirements for each type of control system operation are specified in Section 230501, Basic HVAC Requirements, and this section and are included by specific reference.
- C. Input/Output (I/O) points which are required are herein defined as those hardware and software points needed to achieve the described sequence of operation, measurement, monitoring, calculating and alarming. These are as shown on the Point Lists, and as described and/or shown on the contract drawings, and as described in all specification sections. The points requirement is cumulative in its effect so as to be more complete and inclusive than any one cited source. The points shall be monitored, displayed, adjusted, trended, and/or alarmed at the POT and/or SOC.
- D. Adjustability of Settings: Declarations within the specifications of setpoints, differentials, times, alarm settings, and all other such settings are hereby understood to be field adjustable. Setting provided are intended as an initial operating condition for system startup and configuration unless otherwise noted. Final settings determined during testing and balancing, and during system startup and calibration shall be included in final system back-up, sequence of operations and included in the Operation and Maintenance manual and close-out documentation.

1.02 RELATED SECTIONS

- A. Division 23 Sections
- B. Division 26 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Sequence of Operation: Submit Shop Drawings for each of the systems being controlled shall include a written

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sequence of operation as it appears in these specifications. Any deviation from the written sequences shall be highlighted by the Contractor so that the Commissioner and the Facilities Management Systems Integrator (FMSI) can review, comment and respond to each change. Omission of a sequence or modification of a sequence does not relieve the Contractor from providing the specified sequence.

PART 2 - PRODUCTS

Not applicable to this section.

PART 3 - EXECUTION

3.01 AIR HANDLING/CONDENSING UNITS CONTROL SEQUENCES, AHU-1 & ACCU-1

A. Safety Controls for Air Handling Units:

1. Provide low-limit controller to prevent mixed air from falling below 45°F.
2. A hard-wired interlocked supply high discharge switch shall stop the supply and return fans when duct pressure exceeds design value. The fans shall remain off until the pressure switches are reset. An alarm condition will be sent to the BMS.
3. All duct mounted automatic control instruments shall be mounted on the exterior surface of the insulation, on suitable metal saddles. Provide appropriate extension mountings for control devices to clear insulation.

B. Fire Alarm Shut-Down: This sequence of operation shall be in force at all times and under all modes of operation.

1. The Contractor shall furnish and the mechanical contractor shall install the smoke detector(s) to shut down the system upon sensing smoke.
2. During a fire alarm condition, the Fire Alarm Control Panel (FACP) shall shut down the supply and return fans and the system shall operate and remain in the System-OFF Mode until the alarm condition is cleared.
3. Fire alarm system activation initiated by manual pull station shall not shut down the unit supply and exhaust fans.

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C. Operating Modes. There is only one operation mode at all times: cooling mode, regardless of the actual outdoor season or occupancy mode. All the control and safety devices and the Fire Alarm System shall be engaged permanently.

a. The system shall be independently ON even during a Lon Network communication failure.

D. Sequence of Operation:

1. System-OFF:

a. This state shall be engaged only manually for maintenance purpose, and for short periods, when there is no activity in the building. In this mode the fans shall be OFF, and all cooling shall be de-energized.

2. Cooling Mode:

a. Occupied or un-occupied Cycle:

1) The supply fan are cycleing ON and OFF interlocked with compressor operation.

2) Mechanical DX cooling coil, and associated condensing unit, shall be controlled by cycleing ON/OFF so as to maintain the space temperature at set-point, usually 78°F (adjustable).

3.02 ROOFTOP CONSTANT-VOLUME HVAC UNIT WITH ECONOMIZER DAMPERS, DX-COOLING, GAS-FIRED HEATING AND DDC CONTROLS (HVAC-3)

A. Safety Controls:

1. Provide low-limit control to prevent mixed air from falling below 45°F.

2. The unit and its components are subject to other OEM safety devices. Refer to unit specification sections.

3. Safety Emergency Heating Mode: A furnace control Hand-Off-Auto toggle selector switch shall be utilized as follows. In the "Auto" position, the furnace shall be controlled in the automatic modes as defined herein. In the "Off" position, the furnace shall be disabled. In the "Hand" position, the units' DDC furnace operating controls shall be overridden and the furnace started and ramped up to the full heat output capacity. In all modes, the furnace operation

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shall be subject to all safety devices including but not limited to the manufacturer's high temperature cut-out safety and a unit airflow proving switch.

- B. Fire Alarm Shut Down: This sequence of operation shall be in force at all times and under all modes of operation.
1. The Contractor shall furnish and install the smoke detector(s) to shut down the system upon sensing smoke (if not already provided).
 2. During a fire alarm condition, the Fire Alarm Control Panel (FACP) shall shut down the supply and electrically interlocked exhaust fan and the system shall operate and remain in the System-OFF Mode until the alarm condition is cleared. Simultaneously an alarm condition signal will be sent to the fire alarm system, which will generate an alarm signal. When the unit fans are shut down by a fire alarm condition, all fire/smoke and smoke dampers shall close as commanded by the FACP. After the fire alarm shutdown is cleared, all smoke and fire/smoke dampers shall be commanded open by the FACP and the unit shall resume its normal operation according to the appropriate mode.
 3. Fire alarm system activation initiated by manual pull station shall not shut down the unit supply and return fans and shall not close the associated smoke and/or fire/smoke dampers if in the testing mode.
- C. Operating Modes. The operating modes of the HVAC unit shall be automatically determined by the combined actions of the DDC Scheduler, control and safety devices and the Fire Alarm System.
1. Mode Selection and Fan Operation:
 - a. The operator shall be able to manually select the operating mode through an H-O-A switch mounted in the HVAC UNIT and wired into the digital controller. In the automatic-position the HVAC UNIT is indexed automatically by the DDC Scheduler between the various modes of operation described herein. In the H-position the HVAC UNIT shall remain in the Occupied Mode. In the O-position the HVAC UNIT shall remain in the Unoccupied Mode.
 - b. Summer/Winter Mode Selection and Economizer Mode Selection: The rooftop unit shall be automatically indexed to operate in either the

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Summer Mode or Winter Mode based on the outside ambient temperature.

1. Winter Mode: If the outside temperature is less than or equal to 55 F, the unit shall be de-energised.
2. If the outside temperature is greater than 55°F but less than 60°F, the unit shall be in whatever Mode was the last Mode of operation (off or cooling).
3. Summer Mode: If the outside temperature is greater than or equal to 60°F but less than 65°F, the unit shall be indexed to the Summer Cooling Mode.
4. Economizer Mode: When the calculated global outside air enthalpy is less than the controller's calculated return air enthalpy, the rooftop unit shall be indexed to the Economizer Mode. When the outside air enthalpy is greater than the return enthalpy, the rooftop unit shall be indexed to Summer Mechanical Cooling Mode. If the outside temperature is greater than or equal to 65F, the unit shall be indexed to the Mechanical Cooling Mode. Upon a Lon Network communication failure, the rooftop unit shall default to the seasonal Occupied Mode.

D. Sequence of Operation:

1. System-OFF:

- a. When the HVAC UNIT is OFF, the outside air and exhaust dampers shall be closed, the fans shall be OFF, and all heating and cooling mode operations shall be de-energized.

2. Summer (Cooling) Mode:

1) Occupied Cycle:

- 1) The supply fan is commanded ON and run continuously subject to all safeties. The exhaust fan is OFF.
- 2) The outdoor air damper is opened to its minimum ventilation position, and the exhaust damper is closed.
- 3) Mechanical DX cooling coil, and associated compressors, shall be controlled in stages

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and sequenced so as to maintain the space temperature at set-point, usually 78°F (adjustable).

- 4) Demand controlled ventilation: For unit installation with CO2 sensor and demand control ventilation module outside air damper position shall be modulated by CO2 sensor output signal.
- 5) When the space pressurization sensor reaches space limits, usually 0.05"w.g. (adjustable), the exhaust fan shall turn ON, and the exhaust damper shall open to its minimum position. The exhaust fan shall turn OFF, and the exhaust damper shall close when space pressurization sensor drop below setup point.

b. Unoccupied Cycle:

- 1) Outdoor and exhaust air dampers at HVAC UNIT are fully closed.
- 2) Supply air fan is OFF, exhaust fan is OFF and the associated compressors and condenser fan are de-energized.
- 3) The supply air fan, as well as the associated compressors shall be energized when the high limit of the space air temperature is reached, usually 85 °F (adjustable), and the system shall sequence so as to maintain the space at the high limit set-point for the unoccupied cycle.
- 4) The system shall turn OFF when the space temperature is two degrees below the space high limit for unoccupied cycle, usually 85 °F (adjustable).

3. Winter (Heating) Mode:

a. Occupied Cycle:

- 1) In heating mode the rooftop units provide basic heating and ventilation to the building.
- 2) The supply fan is commanded ON and run continuously subject to all safeties.
- 3) The outdoor damper is opened to its minimum ventilation position.

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- 4) The gas-fired HVAC UNIT's furnace is modulated to maintain the supply air temperature at setup point, based on a schedule function of the outdoor temperature. When activated, a signal shall be sent through BMS system to activate the induced fan motor of the gas burner. Gas burner shall be energized and the burner ignition sequence begins. The heater is subject to a discharge high-temperature limit controller set to 90°F (adjustable). If the supply air temperature exceeds the HTL setpoint, it will take control of the heater reducing the heating capacity of the heat to maintain its maximum allowable setpoint.
- 5) Demand controlled ventilation: For unit installation with CO2 sensor and demand control ventilation module outside air damper position shall be modulated by CO2 sensor output signal.
- 6) When the space pressurization sensor reaches space pressurization limits, usually 0.05" w.g. (adjustable), the exhaust fan shall turn ON, and the exhaust damper shall open to its minimum position. The exhaust fan shall turn OFF, and the exhaust damper shall close when space pressurization sensor drops below setup point.

b. Unoccupied Cycle:

- 1) The units operates in concert with building peripheral heating provided by the existing finned tube radiation. The unit remains in the System-OFF condition until such time that the space temperature drops 4 degrees F below the night time setback temperature setpoint in heating mode.
- 2) The outside air intake and exhaust dampers shall be fully closed at all times during the Unoccupied Mode, and the exhaust fan shall be OFF.
- 3) The HVAC UNIT supply fan is cycled ON to maintain the setback space temperature of 50°F. On a drop in space temperature below the setback setpoint with 4 degrees F, the HVAC UNIT fans are energized and the burner is energized.

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- 4) The heater is subject to a discharge high-temperature limit (HTL) controller set to 95°F (adjustable). If the supply air temperature exceeds the HTL setpoint it will take control of the heater reducing the heating capacity of the heat to maintain its maximum allowable setpoint.
- 5) On a rise in space temperature above the night setback temperature by a differential of 2°F (adjustable) the fan shall be commanded OFF, and the furnace shall be de-energized.

4. Economizer Mode:

- a. The enthalpy controller determines the activation of the economizer mode. The enthalpy sensors compare total heat content of the indoor air and outdoor air to determine the most efficient air source. The Outdoor Air Damper will modulate between the adjustable minimum position and full open to maintain space temperature at the Economizer set point.
- b. The Outdoor Air Damper, Exhaust Air Damper and Recirculation Damper operate simultaneously and interlocked, from fully closed to fully open as follows:
 - 1) When Outdoor Air Damper is fully open, the Exhaust Air Damper is fully open and the Recirculation Damper is fully closed.
 - 2) When Outdoor Air Damper is fully closed, the Exhaust Air Damper is fully closed and the Recirculation Damper is fully open.
 - 3) For any other intermediate position of the Outdoor Air Damper, the Exhaust Air Damper and Recirculation Damper will modulate inversely proportional to each other's position following any modulation of the Outdoor Air Damper above to minimum outdoor air position.
- c. The Outdoor Air Damper will be set to its adjustable minimum position if the Economizer function is disabled or if the Discharge Temperature Sensor has failed.
- d. Economizer mode shall be correlated with the occupied mode only, and shall be disabled in unoccupied mode.

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3.03 ROOFTOP VARIABLE AIR VOLUME HVAC UNIT WITH ECONOMIZER
DAMPERS, DX-COOLING, GAS-FIRED HEATING AND DDC CONTROLS
(HVAC-2, HVAC-4, HVAC-5)

A. Safety Controls:

1. Provide low-limit control to prevent mixed air from falling below 45°F.
2. The unit and its components are subject to other OEM safety devices. Refer to unit specification sections.
3. Safety Emergency Heating Mode: A furnace control Hand-Off-Auto toggle selector switch shall be utilized as follows. In the "Auto" position, the furnace shall be controlled in the automatic modes as defined herein. In the "Off" position, the furnace shall be disabled. In the "Hand" position, the units' DDC furnace operating controls shall be overridden and the furnace started and ramped up to the full heat output capacity. In all modes, the furnace operation shall be subject to all safety devices including but not limited to the manufacturer's high temperature cut-out safety and a unit airflow proving switch.

B. Fire Alarm Shut Down: This sequence of operation shall be in force at all times and under all modes of operation.

1. The Fire Alarm contractor shall furnish and the mechanical contractor shall install the smoke detector(s) to shut down the system upon sensing smoke (if not already provided).
2. During a fire alarm condition, the Fire Alarm Control Panel (FACP) shall shut down the supply and electrically interlocked exhaust fan and the system shall operate and remain in the System-OFF Mode until the alarm condition is cleared. Simultaneously an alarm condition signal will be sent to the fire alarm system, which will generate an alarm signal. When the unit fans are shut down by a fire alarm condition, all fire/smoke and smoke dampers shall close as commanded by the FACP. After the fire alarm shutdown is cleared, all smoke and fire/smoke dampers shall be commanded open by the FACP and the unit shall resume its normal operation according to the appropriate mode.
3. Fire alarm system activation initiated by manual pull station shall not shut down the unit supply and return fans and shall not close the associated

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smoke and/or fire/smoke dampers if in the testing mode.

C. Operating Modes. The operating modes of the HVAC unit shall be automatically determined by the combined actions of the DDC Scheduler, control and safety devices and the Fire Alarm System.

1. Mode Selection and Fan Operation:

a. The operator shall be able to manually select the operating mode through an H-O-A switch mounted in the HVAC UNIT and wired into the digital controller. In the automatic-position the HVAC UNIT is indexed automatically by the DDC Scheduler between the various modes of operation described herein. In the H-position the HVAC UNIT shall remain in the Occupied Mode. In the O-position the HVAC UNIT shall remain in the Unoccupied Mode.

b. Summer/Winter Mode Selection and Economizer Mode Selection: The rooftop unit shall be automatically indexed to operate in either the Summer Mode or Winter Mode based on the outside ambient temperature.

1) Winter Mode: If the outside temperature is less than or equal to 55 F, the unit shall be de-energised.

2) If the outside temperature is greater than 55°F but less than 60°F, the unit shall be in whatever Mode was the last Mode of operation (off or cooling).

3) Summer Mode: If the outside temperature is greater than or equal to 60°F but less than 65°F, the unit shall be indexed to the Summer Cooling Mode.

4) Economizer Mode: When the calculated global outside air enthalpy is less than the controller's calculated return air enthalpy, the rooftop unit shall be indexed to the Economizer Mode. When the outside air enthalpy is greater than the return enthalpy, the rooftop unit shall be indexed to Summer Mechanical Cooling Mode. If the outside temperature is greater than or equal to 65F, the unit shall be indexed to the Mechanical Cooling Mode. Upon a Lon Network communication failure, the rooftop unit shall default to the seasonal Occupied Mode.

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D. Sequence of Operation:

1. System-OFF:

- a. When the HVAC UNIT is OFF, the outside air and exhaust dampers shall be closed, the fans shall be OFF, and all heating and cooling mode operations shall be de-energized.

2. Summer (Cooling) Mode:

a. Occupied Cycle:

- 1) The supply fan is commanded ON and run continuously subject to all safeties. The exhaust fan is OFF.
- 2) The outdoor air damper is opened to its minimum ventilation position, and the exhaust damper is closed.
- 3) Mechanical DX cooling coil, and associated compressors, shall be controlled in stages and sequenced so as to maintain the supply air temperature at set-point, usually 55°F (adjustable).
- 4) The Variable Frequency Drive associated with the supply fan shall modulate fan speed to maintain the supply duct static pressure before VAV box, measured by duct pressure sensor, at minimum required as indicated by VAV box manufacturer.
- 5) Demand controlled ventilation: For unit installation with CO2 sensor and demand control ventilation module outside air damper position shall be modulated by CO2 sensor output signal.
- 6) When the space pressurization sensor reaches space limits, usually 0.05" w.g. (adjustable), the exhaust fan shall turn ON, and the exhaust damper shall open to its minimum position. The exhaust fan shall turn OFF, and the exhaust damper shall close when space pressurization sensor drop below setup point.

b. Unoccupied Cycle:

- 1) Outdoor and exhaust air dampers at HVAC UNIT are fully closed.

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- 2) Supply air fan is OFF, exhaust fan is OFF and the associated compressors and condenser fan are de-energized.
 - 3) The supply air fan, as well as the associated compressors shall be energized when the high limit of the space air temperature is reached, usually 85 °F (adjustable), and the system shall sequence so as to maintain the space at the high limit set-point for the unoccupied cycle.
 - 4) The system shall turn OFF when the space temperature is two degrees below the space high limit for unoccupied cycle, usually 85 °F (adjustable).
3. Winter (Heating) Mode:
- a. Occupied Cycle:
 - 1) In heating mode the rooftop units provide basic heating and ventilation to the building.
 - 2) The supply fan is commanded ON and run continuously subject to all safeties.
 - 3) The outdoor damper is opened to its minimum ventilation position.
 - 4) The gas-fired HVAC UNIT's furnace is modulated to maintain the supply air temperature at setup point, basen on a schedule function of the outdoor temperature. When activated, a signal shall be send through BMS system to activate the induced fan motor of the gas burner. Gas burner shall be energized and the burner ignition sequence begins. The heater is subject to a discharge high-temperature limit controller set to 95°F (adjustable). If the supply air temperature exceeds the HTL setpoint, it will take control of the heater reducing the heating capacity of the heat to maintain its maximum allowable setpoint.
 - 5) Demand controlled ventilation: For unit intallation with CO2 sensor and demand control ventilation module outside air damper position shall be modulated by CO2 sensor output signal.
 - 6) When the space pressurization sensor

reaches space pressurization limits, usually 0.05" w.g. (adjustable), the exhaust fan shall turn ON, and the exhaust damper shall open to its minimum position. The exhaust fan shall turn OFF, and the exhaust damper shall close when space pressurization sensor drops below setup point.

b. Unoccupied Cycle:

- 1) The unit operates in concert with building peripheral heating provided by the existing finned tube radiation. The unit remains in the System-OFF condition until such time that the space temperature drops 4 degrees F below the night time setback temperature setpoint in heating mode.
- 2) The outside air intake and exhaust dampers shall be fully closed at all times during the Unoccupied Mode, and the exhaust fan shall be OFF.
- 3) The HVAC UNIT supply fan is cycled ON to maintain the setback space temperature of 50°F. On a drop in space temperature below the setback setpoint the HVAC UNIT fans are energized and the burner is energized.
- 4) The heater is subject to a discharge high-temperature limit (HTL) controller set to 95°F (adjustable). If the supply air temperature exceeds the HTL setpoint it will take control of the heater reducing the heating capacity of the heat to maintain its maximum allowable setpoint.
- 5) On a rise in space temperature above the night setback temperature by a differential of 2°F (adjustable) the fan shall be commanded OFF, and the furnace shall be de-energized.

4. Economizer Mode:

- a. The enthalpy controller determines the activation of the economizer mode. The enthalpy sensors compare total heat content of the indoor air and outdoor air to determine the most efficient air source. The Outdoor Air Damper will modulate between the

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adjustable minimum position and full open to maintain space temperature at the Economizer set point.

- b. The Outdoor Air Damper, Exhaust Air Damper and Recirculation Damper operate simultaneously and interlocked, from fully closed to fully open as follows:
 - 1) When Outdoor Air Damper is fully open, the Exhaust Air Damper is fully open and the Recirculation Damper is fully closed.
 - 2) When Outdoor Air Damper is fully closed, the Exhaust Air Damper is fully closed and the Recirculation Damper is fully open.
 - 3) For any other intermediate position of the Outdoor Air Damper, the Exhaust Air Damper and Recirculation Damper will modulate inversely proportional to each other's position following any modulation of the Outdoor Air Damper above to minimum outdoor air position.
- c. The Outdoor Air Damper will be set to its adjustable minimum position if the Economizer function is disabled or if the Discharge Temperature Sensor has failed.
- d. Economizer mode shall be correlated with the occupied mode only, and shall be disabled in unoccupied mode.

3.04 EXISTING VARIABLE AIR VOLUME BOXES (VAV)

- A. General: Terminal boxes shall be provided with box manufacturer furnished and commissioned Direct Digital Controllers, sensors, relays, or other control equipment to accomplish the sequence described below. The terminal box manufacturer shall provide specified and scheduled DDC control components to ensure the unit functions as designed. BAS Contractor to provide field wiring and devices not being furnished and installed by equipment manufacturer in the factory.
- B. Existing VAV controllers shall be provided (N.I.C.) with integral actuator, CFM transducer, and temperature sensor with set point adjust, discharge air sensor, transformers, disconnect switches, and all necessary equipment required to meet this sequence of operation.

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C. Sequence of Operations:

1. Summer (Cooling) Mode:

a. Occupied Cycle:

- 1) As the zone space temperature rises above the thermostat temperature set point, the terminal box DDC controller shall reset the airflow volume higher until it reaches its maximum airflow set point.
- 2) As the zone space temperature falls below the thermostat temperature set point, the terminal box DDC controller shall reset the airflow volume smaller until reaches its minimum airflow set point.

b. Unoccupied Cycle

- 1) In this mode usually there is no airflow, except when the space temperature raises above the high limit value. Terminal box DDC controller shall reset the airflow volume at maximum set point, regardless supply fan operation at the RTU, which will cycle to maintain the space temperature under the high limit set point (see RTU sequence of operations above).

2. Winter (Heating) Mode:

a. Occupied Cycle:

- 1) As the zone space temperature falls below the thermostat temperature set point, the terminal box DDC controller shall reset the airflow volume higher until it reaches its maximum airflow set point.
- 2) As the zone space temperature rises above the thermostat temperature set point, the terminal box DDC controller shall reset the airflow volume smaller until reaches its minimum airflow set point.

b. Unoccupied Cycle

- 1) The setback space temperature shall be maintained by the existing perferal finned tube radiation. RTU unit shall only be activated when the space temperature drops 4 degrees F under the night setback temperature.

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- 2) Terminal box DDC controller shall reset the airflow volume at maximum set point, regardless supply fan operation at the RTU, which will cycle to maintain the space temperature at the night time set point (see RTU sequence of operations above).

3.05 BOILER

- A. Heating mode shall be initiated when outside temperature falls below 55 °F, adjustable. The designated lead hot water pump (see sequence for pumps below) shall be engaged and maintain at least minimum water flow required by the lead boiler.
- B. Control of the boiler and burner management systems is accomplished by Boiler Factory provided programmable logic controllers (PLC) and single loop controllers (SLC) furnished by the respective vendors. Appropriate submittals and design documents for details and sequences of operations shall be provided by the vendor supplying the boiler and burner control management system.
- C. Upon a command to start the boiler, the Boiler Factory control panel will first command the selected lead primary water pump to start. After commanding the lead water pump to start and receiving positive motor running indication via a motor leg current switch, the Boiler Factory control panel will open the lead boiler's isolation valves and the boiler flow switch will enable the boiler. The Boiler Factory control panel will monitor end switches on the isolation valves and will initiate the start of the lag Boiler if the isolation valve limit switch indication is not received.
- D. When the heating mode is initiated, the boiler shall be engaged at full power. After the minimum required water flow through the boiler is proved by a flow sensor, the control gas valve, forced draft fan, and the burner, shall be engaged in sequence as programmed.
- E. The control gas valve of the boiler shall modulate to maintain the hot water supply temperature at the setup point, usually 200 °F, adjustable, based on a schedule as function of the outdoor temperature.
- F. Should the boiler fail while in operation, its associated isolation valve will close, and an alarm will be initiated.

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- G. The following Boiler System points from the Factory Lon Communication Card (or gateway) shall be adjusted, monitored and/or alarmed:
1. Boiler hot water set point ($^{\circ}$ F)
 2. Header hot water supply temperature ($^{\circ}$ F)
 3. Header hot water return temperature ($^{\circ}$ F)
 4. Boiler run status
 5. Boiler entering water temp ($^{\circ}$ F)
 6. Boiler leaving water temp ($^{\circ}$ F)
 7. Boiler general fault
 8. Boiler natural gas flow (scfm)
 9. Boiler water flow (gpm)
 10. Boiler low water cut-off.
 11. Boiler natural gas pressure (inch wc)
 12. Combustion air damper status
 13. Combustion air fan status
 14. Boiler exhaust temp ($^{\circ}$ F)
 15. Boiler output capacity (mbh or kw)

3.06 PUMPS P-1 AND P-2 (lead lag configuration)

- A. One of the pumps will be designated as a lead pump, and the other pump automatically shall be indexed as standby pump (or lag pump). Pump assignment will be a manual function, initiated at the boiler control panel, and/or pump control panel. For systems with one pump only, the lead-lag sequence does not apply.
- B. Pump operation is interlocked with boiler operation, and is initiated by the boiler control system as described above.
- C. The variable frequency drive (VFD, where applicable) controller associated with the pump in operation, modulates the pump speed (RPM) to maintain the pressure drop between the discharge and suction line, measured by a differential pressure transmitter at the set point.
- D. The minimum water flow to be maintained in the system, at any time when a heating load occurs, is either the minimum boiler water flow, or the water flow corresponding to the minimum pump speed required by the VFD, whatever is higher.

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- E. In the event of a failure of the lead pump, the stand by pump (the lag pump) shall automatically start, and an alarm signal shall be initiated.
- F. The assignment of the lead and lag pumps shall change periodically based on a predetermined schedule.
- G. The following pump system points shall be adjusted, monitored and/or alarmed:
 - 1. Hot water pump run status (each pump)
 - 2. Pump failed status (each pump)
 - 3. Hot water pump flow (gpm)
 - 4. Pump rpm (each pump)
 - 5. System pressure drop (ft of water)

3.07 COMBUSTION AIR FAN AND DAMPER CONTROL

- A. The motorized combustion air damper and the combustion air fan shall be interlocked with boiler burner operation.
- B. The combustion air damper shall automatically open, when the boiler burner operates. The combustion air damper shall automatically close, when the burner is off.
- C. Failure of the damper to open, or failure of the fan to run, when the boiler controller send a signal to boiler to operate, shall initiate a failure signal and an alarm.

3.08 ELEVATOR MACHINE ROOM EXHAUST FAN, EF-1, AND ASSOCIATED SMOKE DAMPER

- A. Smoke damper shall be normally closed.
- B. Fan shall be continuously ON, except for maintenance, as required.
- C. When the smoke detector associated with elevator shaft smoke damper, is activated by the presence of smoke, it shall send a signal to open the shaft smoke damper, and send an alarm signal to the fire alarm system and to BMS.

3.09 SPACE TEMPERATURE CONTROL FOR EXISTING PERIMETER HEATING AND OTHER EXISTING HOT WATER HEATING EQUIPMENT

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- A. Existing perimeter hot water heating, and other existing heating equipment which is not part of this contract, such as existing convectors, unit heaters, and cabinet heaters, shall be fully integrated with Building Management Control system and operate in accordance with this section of operations.
- B. The Contractor shall determine status of existing control components for the existing heating equipment, not part of this contract, such as local thermostats and zone control valves, and make sure they are fully operational, and inform the facility if they are not.
- C. The hot water control valve installed on the hot water return main branch from the zone space, shall cycle on and off to maintain the space temperature at the setpoint, in accordance with the appropriate cycle at the time (occupied or un-occupied), usually 68 °F in occupied cycle (adjustable), and 50 °F in unoccupied cycle (adjustable). The perimeter heating during the night time shall cycle ON/OFF at two (2) degrees differential from the set point. If temperature drops four (4) degrees below the setpoint, then the RTU associated with that space shall be engaged (see RTU sequence above).

END OF SECTION

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SECTION 232003
THERMOMETERS AND GAUGES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Thermometers and gauges provided as part of factory-fabricated equipment are specified as part of the equipment assembly in other Division-23 Sections.

1.02 RELATED SECTIONS

- A. Division 23 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Product Data shall include calibrated performance curves.
- B. Schedule for thermometers and gages indicating manufacturer's number, scale range, and location for each.
- C. Operation and Maintenance manuals.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

- A. Codes and Standards
1. UL Compliance: comply with applicable UL standards pertaining to gauges.
 2. ANSI and ISA Compliance: comply with applicable portions of ANSI and Instrument Society of America (ISA) standards pertaining to construction and installation of thermometers and gauges.
 3. American Society of Mechanical Engineers (ASME): ASME B40.200, Thermometers, Direct Reading and Remote Reading; ASME B40.100, Pressure Gauges and Gauge Attachments.

PART 2 - PRODUCTS

2.01 MATERIALS AND MANUFACTURERS

- A. Glass Thermometer:
1. Provide fabricated from materials, and with capacities and ranges, designed and constructed for use in service.

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- a. Case: die cast aluminum finished in baked epoxy enamel or powder coated, glass front, 9" long.
- b. Adjustable Joint: die cast aluminum, finished to match case, 180° adjustment in vertical plane, 360° adjustment in horizontal plane, with locking device.
- c. Tube and Capillary: non-toxic liquid filled, with magnifying lens, 1% scale range accuracy, shock mounted.
- d. Scale: non-reflective aluminum with permanently etched markings. The scale shall be V-shaped for optimum readability.
- e. Stem: copper-plated steel, brass, or aluminum for separable socket or installation in mounting bracket and of length to suit installation.
 - 1) Design for Air-Duct Installation: With ventilated shroud.
 - 2) Design for Thermowell Installation: Bare stem.
- f. Connector: 1-1/4", with ASME B1.1 screw threads.
- g. Range: conform to the following:
 - 1) Hot Water: 30° F. - 240° F
 - 2) Duct: 30° F - 180° F

2. Approved Manufacturers:

Miljoco Corporation
Weiss Instruments, Inc.
Weksler Instruments
Or approved equal

B. Dial Type Insertion Thermometers:

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1. Provide fabricated from materials, with capacities and ranges, designed and constructed for use in service.
 - a. Type: bi-metal, stainless steel case and stem, 5" diameter dial, dust and leak proof, of stem diameter and length to suit installation.
 - b. Accuracy: $\pm 1\%$ of dial range.
 - c. Range: conform to the following:
 - 1) Hot Water: 30° F. - 240° F.
 - 2) Duct: 30° F. - 180° F.
2. Approved Manufacturers:

Miljoco Corporation
Weiss Instruments, Inc.
Weksler Instruments
Or approved equal

C. Thermometer Wells

1. Provide thermometer wells constructed of brass or stainless steel, pressure rated to match piping system design pressure; length as required to hold thermometer with a 2" extension for insulated piping. Provide cap nut with chain fastened permanently to thermometer well.
2. Manufacturer: same as thermometers.

D. Duct-Thermometer Mounting Brackets: Flanged bracket with screw holes, for attachment to air duct and made to hold thermometer stem.

E. Pressure Gauges:

1. Provide pressure gauges of materials, capacities and ranges, designed and constructed for use in service as required.
 - a. Type: General use, 1% accuracy, ANSI B40.1 grade A, bronze bourdon type, bottom connection unless otherwise indicated.
 - b. Case: drawn steel or brass, cast aluminum, shatterproof glass lens, 4-1/2" diameter.

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- c. Connector: brass with 1/4" male NPT. Provide protective syphon when used for steam service.
- d. Scale: white coated aluminum, with permanently etched markings.
- e. Range: conform to the following:
 - 1) Water: 0 - 200 psi.

2. Approved Manufacturers:

Ametek/U.S. Gauge.
Weiss Instruments, Inc.
Weksler Instruments
Or approved equal

F. Pressure Gauge Cocks:

- 1. Provide pressure gauge cocks between pressure gauges and gauge tees on piping systems. Construct gauge cock of brass with 1/4" female NPT on each end, and "T" handle brass plug.
 - a. Syphon: 1/4" straight coil constructed of brass tubing or loop-shaped section of brass, stainless-steel or steel pipe with 1/4" male NPT on each end.
 - b. Snubber: 1/4" brass bushing with corrosion resistant porous metal disc, through which pressure fluid is filtered. Select disc material for fluid served and pressure rating. Include extension for use on insulated piping.
- 2. Manufacturer: same as for pressure gauges.

G. Pressure and/or Temperature Gauge Connector Plugs:

- 1. Provide gauge connector plugs rated for 500 psi at 200° F. Construct of brass and finish in nickel-plate equip with 1/4" or 1/2" NPS fitting, with self-sealing valve core type neoprene gasketed orifice suitable for inserting 1/8" OD probe assembly from dial type insertion pressure and/or temperature gauge. Equip orifice with gasketed screw cap and chain. Provide extension, length equal to insulation thickness, for insulated piping.
- 2. Approved Manufacturers:

Miljoco Corporation.
Sisco, A Spedco, Inc. Co.
Watts Regulator Co.
Or approved equal

PART 3 - SUPPLEMENTAL EXECUTION

3.01 INSTALLATION

A. Temperature Gauges

1. Install temperature gauges in accordance with the manufacturer's printed installation instructions, in vertical upright position and tilted so as to be easily read by observer standing on the floor. Each thermometer shall have an isolation shutoff valve for service and removal. Install direct-mounted thermometers in thermowells.

Thermometers for Sensing Liquid Temperature: provide with separable sockets. Sockets for use in insulated piping, insulated tanks or similar equipment shall have extension lagging neck type, of length as required to compensate for insulation thickness, and proper immersion.

Duct Thermometer Support Flanges: install in wall of duct where duct thermometers are required or indicated on the Drawings. Attach to duct with screws.

2. Locations: install in the following locations, and elsewhere as indicated on the Drawings:
 - a. At inlet and outlet of boiler
 - b. At inlet and outlet of hot water coil in air handling unit
 - c. At outside-air, return-air, and mixed-air ducts

B. Pressure Gauges

1. Install pressure gauges in accordance with the manufacturer's printed installation instructions, in piping tee with pressure gauge cock, located on pipe at most readable position.

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2. Locations: install in the following locations, and elsewhere as indicated on the Drawings:
 - a. At suction and discharge of each pump
 - b. At discharge of each pressure reducing valve
 - c. At duct as shown on the Drawings
3. Pressure Gauge Cocks: install in piping tee with snubber. Install syphon for steam pressure gauges.

3.02 ADJUSTING AND CLEANING

- A. Adjusting: adjust faces of gauges to proper angle for best visibility.
- B. Cleaning: clean windows of thermometers and gauges and factory-finished surfaces. Replace cracked or broken windows; repair any scratched or marred surfaces with manufacturer's touch-up paint.

END OF SECTION

SECTION 232116
HYDRONIC SPECIALTIES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Hydronic specialties furnished as part of factory-fabricated equipment are specified as part of the equipment assembly in other Division-23 Sections.

1.02 RELATED SECTIONS

- A. Division 23 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Product Data: Include flow and pressure drop curve or chart for each type and size of hydronic specialty. For the Water Flow Control Valve and Balancing Valves, incorporate a calibrated chart and the computed flow rates based on the equipment actually installed; these rates shall be indicated on a flow diagram, which shall be submitted for approval.

Air Separators and Compression Tank: National Board Form U-1 denoting compliance, one form for each.

- B. Shop Drawings: Submit schedule indicating manufacturer's figure number, size, location, capacities, and features for each hydronic specialty.

- C. Maintenance data.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

- A. Codes and Standards: ASME Compliance: Manufacture and install hydronic specialties in accordance with ASME B31.9: Building Services Piping.

PART 2 - PRODUCTS

2.01 MATERIALS AND MANUFACTURERS

- A. Provide factory-fabricated hydronic specialties recommended by the manufacturer for use in service indicated. Provide sizes and connections that properly mate with pipe, tube and equipment connections.

- B. Balancing Valves with Read-out Ports

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1. Where the Drawings indicate a balancing valve in the water piping, provide a combination shut-off and balancing valve with read-out ports of heavy brass construction up to 2" and of cast-iron construction 2-1/2" and above, with visible graduated dial indicator and read-out ports built for a working water pressure of 250 psig at 250° F. Valve shall be globe or ball type. Valve shall be complete with a locking mechanism that can be set at a balance point, so that the valve may be opened and closed, but not opened beyond the pre-set balance point.

2. Manufacturers:

Armstrong Pumps, Inc.
Bell & Gossett ITT; Fluid Handling Div.
Grinnell Mechanical Products by Tyco
Or approved equal

C. Air Vents

1. Manual Air Vent shall consist of a 1/4" bronze pet cock with lever handle, fitted into a pipe tee.
2. Automatic Air Vent: Provide automatic air vent designed to vent automatically with float principle, stainless steel or non-ferrous float and mechanisms, cast-iron or brass body, pressure rated for 125 psi, 1/2" NPS inlet and outlet connections if required. (Sarco Co. Type 13W, Spirotherm, Inc. Spirotop)
3. Manufacturers:

Armstrong Pumps, Inc.
Bell & Gossett ITT; Fluid Handling Div.
Hoffman Specialty ITT; Fluid Handling Div.
Or approved equal

D. Flow Control Valves (Check Valves)

1. Provide flow control valves pressure rated for 125 psi, containing lift check assembly which will automatically open by means of pump flow pressure, and automatically close when pump is not operating. Provide with means to manually open in case of pump failure.

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- a. Threaded Ends 2-1/2" and Smaller: cast-iron body, bronze check mechanism, screw-in bonnet, straight or angle pattern.
- b. Soldered Ends 4" and Smaller: cast-bronze body, bronze check mechanism, screw-in bonnet, straight or angle pattern.
- c. Flanged Ends 3" and Larger: cast-iron body, bronze check mechanism, screw-in bonnet, straight or angle pattern.

2. Manufacturers:

Armstrong Pumps, Inc.
Bell & Gossett ITT; Fluid Handling Div.
Taco, Inc.
Or approved equal

E. Air Separators

1. Provide one of the following type of air separators pressure rated for 125 psi. Selection shall be based upon system flow including head loss and velocity criteria in order to maintain efficiency. Nominal head loss shall not exceed 1 foot and nominal entering velocity shall not exceed 4 feet per second unless the unit is specifically designed and manufactured for higher velocities to maintain efficiency.

- a. Dip Tube Fittings: Provide dip tube fittings in boilers to prevent free air collected in boiler from rising into system.
- b. In-line Air Separators: Provide in-line air separators. Construct sizes 1-1/2" and smaller of cast iron; and sizes 2" and larger of steel complying with ASME Boiler and Pressure Vessel Code and stamped with "U" symbol.

2. Manufacturers:

Amtrol, Inc.
Armstrong Pumps, Inc.
Bell & Gossett ITT; Fluid Handling Div.
Or approved equal

F. Compression Tank

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1. Provide compression tank, of the capacity indicated on the Drawings. Tank shall be constructed for 125 psig working pressure according to ASME code. Tank shall be guaranteed leakproof by the manufacturer and the exterior surface shall be coated with a rust preventive material. Provide a drain tapping at bottom of tank with a drain fitting.
 - a. Provide on the inlet to the compression tank, if required, a tank fitting for the proper control of air in the tank. Tank fitting shall be iron body with non-ferrous internal parts, constructed for 125 psig working pressure and shall have a separate manual copper vent tube for establishing the proper air volume in the compression tank on initial filling.
 - b. Provide in a tapping on the compression tank a drain valve with hose threaded outlet and with means to introduce air to the tank to facilitate drainage.

2. Manufacturers:

Amtrol, Inc.
Armstrong Pumps, Inc.
Bell & Gossett ITT; Fluid Handling Div.
Or approved equal

G. Pump Discharge Check Valves

1. Provide non-slam check valve with spring-loaded disc and calibrated adjustment feature permitting regulation of pump discharge flow and shutoff. Design valves to permit repacking under full line pressure, and with bolt-on bonnet. Provide flanged cast-iron valve body, pressure rated for 175 psi, maximum operating temperature of 300° F. Provide straight or angle pattern.

2. Manufacturers:

Amtrol, Inc.
Armstrong Pumps, Inc.
Bell & Gossett ITT; Fluid Handling Div.
Or approved equal

H. Pressure Reducing Valves

1. Where shown on the Drawings, provide in the make-up water supply line, an iron body pressure reducing

valve with brass internal parts. Reducing valve shall be provided with a strainer and a check valve to prevent back flow of water when city water pressure is less than the system pressure. Valve setting shall be as indicated on the Drawings

2. Manufacturers:

Amtrol, Inc.
Armstrong Pumps, Inc.
Bell & Gossett ITT; Fluid Handling Div.
Or approved equal

I. Make-up Water Feeders

1. Provide a float-operated feeder used to add make-up water to fill tank. Feeder shall be mounted to the tank with top and bottom equalizing lines and feeds water through a separate pipe, permitting anti-siphon air gap. Valve shall be stainless steel with monel seat and protected by strainers.

2. Manufacturers:

McDonnell & Miller ITT;
Fluid Handling Div.
Approved equal.

PART 3 - EXECUTION

3.01 SUPPLEMENTAL INSTALLATION

A. Balancing Valves: Install balancing valves where shown on the Drawings. After hydronic system balancing has been completed, mark each balancing valve with stripe of yellow lacquer across body and stop plate to permanently mark final balanced position. (Refer to Section 230594 Balancing of Systems)

B. Air Vent

1. Manual Air Vent: Install manual air vent on each hydronic terminal at highest point, and on each hydronic piping drop in direction of flow for mains, branches, and runouts, and elsewhere as indicated on the Drawings.

2. Automatic Air Vent: Install automatic air vent at top of each hydronic riser and elsewhere as indicated on the Drawings. Install shutoff valve between riser and air vent; pipe outlet to suitable plumbing drain, or as indicated on the Drawings.

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- C. Flow Control Check Valves: Install flow control valves on discharge of each pump servicing hydronic system or zone, and elsewhere as indicated on the Drawings. Install with check mechanism in upright position, with adequate clearance of service and replacement. Screw check down for automatic operation.
- D. Air Separators
- In-Line Air Separators: Install in-line air separators in pump suction lines. Connect inlet and outlet piping. Run piping to compression tank with 1/4" per foot (2%) upward slope towards tank. Install blowdown valve and piping. Remove and clean strainer after 24 hours and again after 30 days of system operation. Include this information in the maintenance data.
- E. Compression Tanks: Install compression tanks on trapeze hangers sized for tank fully loaded, or otherwise as indicated on the Drawings. Install tank fitting in tank bottom and charge tank in accordance with manufacturer's instructions.
1. Tank Fittings: Install tank fittings in bottom of compression tanks. Use manual vent for initial fill to establish proper water level in tank.
- F. Pump Discharge Valves: As indicated on the Drawings, install pump discharge valves on each pump discharge line in lieu of separate shutoff valve and check valve. Install in horizontal or vertical position with stem in upward position; allow clearance above stem for check mechanism removal. After hydronic system has been completed, mark calibrated name plate with stripe of yellow lacquer to permanently mark final balanced position.
- G. Pressure Reducing Valves: Install where indicated on the Drawings, and in accordance with manufacturer's installation instructions.
- H. Manual Water Flow Rate Control: Install at each location as shown on the Drawings. For pipe sizes over 3", Insert shall be installed with gaskets between standard ASA pipe flanges. A globe valve furnished with square operating nut shall be provided in the piping on the discharge side of the insert at a minimum distance of 12".
- I. Make-Up Water Feeders: Install on the make-up water system line in the location shown on the Drawings.

END OF SECTION

SECTION 232123
HYDRONIC PUMPS

PART 1 - GENERAL

1.01 RELATED SECTIONS

- A. Division 23 Sections
- B. Division 26 Sections

1.02 SUPPLEMENTAL SUBMITTALS

- A. Product Data: Submit current accurate pump characteristic performance curves with selection points clearly indicated.
- B. Shop Drawings: Schedule: Pump schedule showing pump specifications, application, layout and connections.
- C. Wiring Diagrams: Submit manufacturer's electrical requirements for the power supply wiring. Power supply wiring shall be provided by the Contractor. Submit manufacturer's wiring diagrams for interlock and control wiring. Clearly differentiate between portions of wiring that are factory installed and portions to be field installed by the Contractor.
- D. Provide a set of manufacturer's guarantees for all equipment supplied.
- E. Maintenance data.
- F. Videotapes produced during the training.
- G. Certificate: Contractor's start-up and demonstration affidavit.

1.03 SUPPLEMENTAL QUALITY ASSURANCE

- A. Codes and Standards
 - 1. HI Compliance: Design, manufacture and install HVAC pumps in accordance with HI: Hydraulic Institute Standards.
 - 2. UL Compliance: Design, manufacture and install HVAC pumps in accordance with UL 778: Motor Operated Water Pumps.
 - 3. All appliances regulated by the New York City Construction Codes shall be listed and labeled (reference MC 301.4, MC 301.6). Testing of material and equipment shall be in accordance with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is

not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department (MEA) before the effective date of the NYC Construction Codes may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.

- B. Supply nameplate data on pumps and drives.
- C. Before submitting any equipment shop drawings for approval, the Contractor, and the Equipment Vendor and Manufacturer shall coordinate the controls required for the system.

1.04 MANUFACTURER WARRANTY

- A. Pumps guarantee shall be for five years. The guarantee period start date shall be the date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MATERIALS AND MANUFACTURERS

- A. Pumps of the same type shall be manufactured by the same manufacturer.
- B. In-Line Circulating Pumps
 - 1. Provide in accordance with the following:
 - a. Type: Horizontal mount, vertical split case, oil-lubricated, designed for 125 psi working pressure and 225°F continuous water temperature.
 - b. Body: Cast iron, with suction and discharge gage tappings.
 - c. Shaft: Manufacturer to specify type of hardened alloy steel.
 - d. Bearings: Oil-lubricated bronze ball bearings with an oil level indicator.
 - e. Seal: Mechanical, with carbon seal ring and ceramic seat.
 - f. Motor: Non-overloading at any point on pump curve, open, drip-proof, oil-lubricated ball bearings, resilient mounted construction, built-in thermal overload protection on single phase motors.

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- g. Coupling: Self-aligning flexible coupling.
- h. Impeller: Enclosed type, hydraulically and dynamically balanced, and keyed to shaft.

2. Approved Manufacturers:

Bell & Gossett ITT; Fluid Handling Div
MEPCO (formerly Dunham-Bush, Inc.)
Taco, Inc.
Or approved equal

C. End Suction Pumps

1. Provide in accordance with the following:

- a. Type: Horizontal mount, single stage, vertical split case, flexible coupling, base mounted, designed for 175 psi working pressure, with true back pull, capable of being serviced without disturbing piping connections.
- b. Casing: Cast iron, 125 psi ANSI flanges, tappings for gage and drain connections, and venting pet cock at its highest point.
- c. Shaft: Heat-treated carbon steel.
- d. Bearings: Regreasable ball bearings.
- e. Seal: Mechanical, with carbon seal ring and ceramic seat.
- f. Motor: Open, drip-proof, regreasable ball bearings.
- g. Impeller: Enclosed type, hydraulically and dynamically balanced, keyed to shaft and secured with locking screw.
- h. Baseplate: Structural steel with welded cross members, and open grouting area.
- i. Coupling: Flexible, capable of absorbing torsional vibration, equipped with coupling guard with opening for meter reading.

2. Approved Manufacturers:

Bell & Gossett ITT; Fluid Handling Div
MEPCO (formerly Dunham-Bush, Inc.)
Taco, Inc.
Or approved equal

- D. Motor Enclosures and Temperature Rise: Motors subject to excessive dust or abrasive shall be of the totally

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enclosed type. Motors subject to dripping oil or water shall be of the drip proof or otherwise enclosed type. Conditions constituting a hazard from an explosive standpoint shall require a motor of the explosion proof class. Temperature rise with Class "A" insulation shall be based on the following: Open frame: 40o C.; totally enclosed and fan cooled: 55o C. Temperature rises shall conform to A.I.E.E. Standards for continuous and/or short time rated motors. All motors, motor starters, variable frequency drives and LonWorks cards (for variable speed pumping systems) shall be in accordance with the requirements of Section 262419, Motors and Control Equipment, regardless if the pumping system is packaged or non-packaged.

PART 3 - EXECUTION

3.01 SUPPLEMENTAL INSTALLATION

A. Install pumps in accordance with the following:

1. Access: Provide access space around pumps for service, but in no case less than that recommended by the manufacturer.
2. Install in-line pumps in piping system with supports and vibration isolators recommended by the manufacturer.

B. Electrical Wiring

1. The Contractor shall install electrical devices furnished by manufacturer but not specified to be factory-mounted. Furnish copy of manufacturer's wiring diagram submittal to Electrical. Verify that electrical wiring installation is in accordance with manufacturer's submittal and installation requirements of Division 26 Sections. Do not proceed with equipment start-up until wiring installation is acceptable.
2. The Contractor shall provide the control wiring between field-installed controls, indicating devices, and pump control panels. The Contractor shall provide integration of monitoring and alarm functions by integrating the pumping system into the Building Management System/Direct Digital Control, BMS/DDC.
3. Control interlock wiring between pumps and between pumps and field-installed control devices that are not factory installed and power wiring shall be provided by the Contractor. Temperature Controls shall be provided by the System Contractor.
4. All pumps shall be installed on the 24-hour panel for continuous uninterrupted pump operation (as called for by the outside thermostat when ambient temperature is at 40 degrees F. or less.)

- C. Piping Connections: Provide piping, valves, accessories, gauges, supports, and flexible connections.

3.02 INTERDISCIPLINARY TESTS AND FUNCTIONAL PERFORMANCE TESTS

- A. Interdisciplinary Pre-Start-Up and Start-Up Tests:

The Contractor shall conduct interdisciplinary pre-start up and start up tests as per the manufacturer's start up procedures. The Contractor shall submit signed start up affidavit signed by the factory authorized service representative indicating that all of the manufacturer's pre-start up and start up procedures have been successfully completed.

- A. Functional Performance Tests:

Contractor shall also submit signed functional performance testing affidavit signed by the factory authorized service representative indicating that all of the manufacturer's functional performance tests have been successfully completed. Refer to the functional performance tests as defined in Section 230923 since a BMS/DDC system is to be provided and the equipment is to be integrated into the BMS/DDC system.

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SECTION 232500
WATER TREATMENT (HVAC)

PART 1 - GENERAL

1.01 RELATED SECTIONS

A. Division 23 Sections

1.02 SUPPLEMENTAL SUBMITTALS

- A. The Water Treatment Firm shall be approved by the City of New York. The Contractor shall submit a list of installations of similar capacity in New York City, which have been successfully tested by the proposed water treatment firm.
- B. Product data defining chemical products being supplied.
- C. Water Analysis: the Water Treatment Firm shall make an analysis of the raw water supply to the building and recommend the chemical dosages to be used and shall check biweekly on the effectiveness of the treatment, prior to final payment.
- D. Submit samples of the laboratory standard forms, for approval.
- E. Submit written copies of the test results conducted biweekly on the systems being treated on the Water Treatment Firm/Laboratory Standard Pre-approved Forms. List condition of the water, chemical dosages and all other items and accessories required.
- F. Operation Data: provide copy of written instructions on the procedures, tests required and dosages to be used for the chemical treatment of the system.
- G. Written guarantee by the Water Treatment Firm and the Contractor.
- H. Videotapes produced during the training.
- I. Certificate: Contractor's start-up and demonstration affidavit.

1.03 QUALITY ASSURANCE

- A. Consultant Water Treatment Firm:
1. Provide the services of an independent professional water treatment firm for the chemical treatment of the hydronic systems installed under the Work of this Contract.

2. Failure of the Contractor to submit the biweekly test reports during the temporary heat time period (if any) and during the one-year warranty period after Substantial Completion shall require the Contractor to secure the diagnostic inspection services of a metallurgist who is a licensed Professional Engineer registered in the State of New York. The expenses for securing the services of the metallurgist and any costs associated with performing any required remedial work identified by the metallurgist shall be borne by the Contractor.

1.04 GUARANTEE

- A. The Consultant Water Treatment Firm and the Contractor shall guarantee in writing, that the water systems and any component parts thereof, will experience no more than minimal scale formation, corrosion, pitting, algae and slime growth, for a period of one year from the date of Substantial Completion of this Project, when treated in strict accordance with the Water Treatment Firm's recommendations. The initiation of the one-year warranty period shall not include the time prior to Substantial Completion. Water treatment shall be performed on the hydronic equipment as soon as it is filled with water. Bi-weekly testing and reporting of the test results shall continue for the one-year duration of the warranty period and also during any time period that the equipment is used for temporary heat.

1.05 PERFORMANCE REQUIREMENTS

- A. Base chemical treatment performance requirements on quality of water available at Project site, HVAC system equipment material characteristics and functional performance characteristics, operating personnel capabilities, and requirements and guidelines of authorities having jurisdiction.

PART 2 - PRODUCTS

2.01 EQUIPMENT FOR SYSTEMS REQUIRING TREATMENT

- A. Refer to Drawings for capacities of all equipment and systems, and the entering and leaving temperatures of water for all equipment and systems.

2.02 WATER TREATMENT FIRMS

Cascade Water Services, Inc.
Nalco Chemical Company
Aqua Testing Inc.
Approved equal.

2.03 MATERIALS

- A. Water Treatment Unit (Shot Feeder): Provide water treatment unit of capacity and constructed of steel as shown on the Drawings for introducing chemicals in the hydronic systems. Provide valve for loading, drain valve in bottom, and recirculating valves on each side.
- B. Chemicals: Chemicals shall be as recommended by the Water Treatment Firm.
- C. pH Comparator: Suitable range to conform to the chemical treatment furnished.

2.03 TEST EQUIPMENT

- A. Metal test cabinet complete with sufficient glassware and reagents to make each of the following determinations once a day, for the period of the contract and the guarantee.
 - 1. pH by color comparator.
 - 2. Chemicals used by color comparator and titration.
 - 3. Total dissolved solids by concentration hydrometer.
- B. Test Kit: Manufacturer recommended equipment and chemicals, in a carrying case, for testing pH, total dissolved solids, dissolved oxygen, biocount, chloride, and total alkalinity and for calcium hardness field tests.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install chemical feeders, complete with valves and piping, as indicated on the Drawings.
- B. Install test cabinet complete with all glassware and reagents, at location as directed by the Commissioner.

3.02 FIELD QUALITY CONTROL

- A. It is the intent of these specifications to provide complete systems of chemical treatment to protect all water systems from freezing, scale formations, corrosion, algae and slime growth.
- B. Engage a factory-authorized service representative to perform startup service.
 - 1. Inspect field-assembled components and equipment installation, including piping and electrical connections. Report results in writing.

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2. Inspect piping and equipment to determine that systems and equipment have been cleaned, flushed, and filled with water, and are fully operational before introducing chemicals for water-treatment system.
3. Place HVAC water-treatment system into operation and calibrate controls during the preliminary phase of HVAC systems' startup procedures.

3.03 DEMONSTRATION

- A. Preliminary Requirements: Provide the services of the field service representative of Water Treatment Company for the following:
1. Inspect each water treatment feeder installation prior to the addition of chemicals.
 2. Supervise initial charging of the water system based on city water analysis.
 3. Instruct the City of New York Designated Personnel.
 4. Perform biweekly testing and submit test results starting as soon as the systems are filled with water and continue for one (1) year after Substantial Completion of the.

END OF SECTION

SECTION 233300
DUCTWORK ACCESSORIES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide duct accessories specified herein, shown on the Drawings along with all the auxiliary work needed for a complete and proper installation. The types of ductwork accessories specified in this Section include the following: turning vanes, duct hardware, duct access doors and flexible connections.

1.02 RELATED SECTIONS

- A. Division 23 Sections
- B. Division 26 Sections

1.03 SUPPLEMENTAL SUBMITTALS

A. Shop Drawings: Submit manufacturer's assembly-type shop drawings and shop standards. Submit SMACNA Figure Numbers for each shop fabricated item.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

A. Codes and Standards

1. SMACNA Compliance: Comply with applicable portions of SMACNA: HVAC Duct Construction Standards, Metal and Flexible, 2005 edition.
2. Industry Standards: Comply with SMACNA recommendations pertaining to construction of ductwork accessories, except as otherwise indicated on the Drawings.
3. NYC Mechanical Code Compliance: Comply with applicable provisions of the NYC Mechanical Code Chapters 5, 6 and 7 and the manufacturer's installation instructions pertaining to installation of ductwork accessories.

PART 2 - PRODUCTS

2.01 MATERIALS AND MANUFACTURERS

A. Turning Vanes

1. Fabricated Turning Vanes: Provide fabricated turning vanes and vane runners, constructed in accordance with SMACNA: HVAC Duct Construction Standards, latest edition.

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2. Acoustic Turning Vanes: Provide acoustic turning vanes constructed of airfoil shaped aluminum extrusions with perforated faces and fiberglass fill.
3. Provide shop fabricated turning vanes or provide from one of the following manufacturers:

Anemostat Products Div.
Dynamics Corp. of America
Duro Dyne Corp.
Tuttle & Bailey, Hart & Cooley Mfg. Co.
Titus Product, Div. of Philips Inds.
Or approved equal

B. Duct Hardware

1. Provide test hole fittings for making air readings for the proper adjusting and testing of the ventilating systems. Material and gauge of the fittings shall be compatible with the duct material. Include screw cap and gasket. Size of fitting shall allow insertion of testing instruments and of length of fitting shall allow for the duct insulation thickness. "Duro Dyne", instrument test port, "Ventlock 699" are suitable for this purpose. If required, provide test hole fitting for microprocessor type of instrument reading either local or remote.
2. Provide shop fabricated duct hardware or provide from of one of the following manufacturers:

Duro Dyne Corp.
Young Regulator Co.

D. Fan Connections (Flexible Connections): (Ref. SMACNA HVAC Duct Construction Standards - Latest Edition)

1. Provide an airtight fabric neck at the inlet and at the outlet connections of all air handling units, supply fans and exhaust fans and where ductwork connects to vibration isolation equipment in accordance with MC.603.18.
2. Necks shall be not less than 3" nor more than 10" in width and both sides shall be secured with crimped lock seam the entire perimeter with galvanized sheet steel bands 3" wide. This assembly shall be securely fastened to ducts and fans, and the joints shall be made air tight. Necks shall not be oiled or painted. Neck fabric shall be one of the following materials:

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- a. Cotton duck, 10-ounces per square yard minimum weight, conforming to Federal Specifications CCC-C-428D (treated for fire, water, and mildew resistance)
 - b. Flameproof elastomeric coated glass fabric, weighing not less than 14-ounces per square yard, having a tensile strength of 200 psi (minimum) and having a heat resistance of up to 500° F. ("Thermafab", manufactured by Duro Dyne Corp., is an example of this material).
 - c. Close woven glass cloth, double neoprene coated, 28-ounces per square yard minimum weight.
3. Where ambient air temperature exceeds 100° F, use material No.2b or No.2c. Where materials are exposed to weather or corrosive fumes (acids, alkalies, garage or fume hood exhausts), use material No.2c.
 4. Provide shop fabricated fan connections or provide from one of the following manufacturers:

Duro Dyne Corp.
Flexaust (The) Co.
- E. Smoke Detecting Devices: Provide opening in the ductwork for the smoke detecting devices at various locations, and as indicated on the Mechanical and Electrical Contract Drawings and Approved Shop Drawings. Mechanical Contractor shall install duct smoke detectors in the ductwork. Electrical Contractor shall furnish duct smoke detectors, and provide power wiring and control wiring for the duct smoke detectors.

PART 3 - SUPPLEMENTAL EXECUTION

3.01 INSTALLATION OF DUCTWORK ACCESSORIES

- A. Install ductwork accessories in accordance with manufacturer's installation instructions, with applicable portions of details of construction as shown in SMACNA standards, and in accordance with recognized industry practices to ensure that products serve intended function.
- B. Install turning vanes in square throat elbows in supply and exhaust air systems, and elsewhere as indicated on the Drawings.
- C. Install test hole fittings for making air readings, on both (opposite) sides of discharge duct from all supply and exhaust fans, at set dampers on supply and return branch ducts, and at other locations where shown on the Drawings

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for the proper adjusting and testing of the ventilating systems.

- D. Install doors in built-up casing to open against system air pressure, with latches operable from both sides.
- E. Coordinate as necessary to interface installation of ductwork accessories with other work.

3.02 FIELD QUALITY CONTROL

- A. Operate installed ductwork accessories to demonstrate compliance with requirements. Test for air leakage while system is operating. Repair or replace faulty accessories, as required to insure proper operation.

3.03 ADJUSTING AND CLEANING

- A. Adjusting: Adjust ductwork accessories for proper settings.
- B. Label access doors in accordance Section 230553: HVAC Identification.
- C. Cleaning: Clean factory-finished surfaces. Repair any marred or scratched surfaces with manufacturer's touch-up paint (Refer to Section 099000: Painting and Coating).

END OF SECTION

SECTION 233113
METAL DUCTWORK

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide all the metal ductwork used for the HVAC system, as specified herein, as shown on the Drawings and as needed for a complete and proper installation. The inserted section of ducts shall match the existing duct material and schedule.

1.03 RELATED SECTIONS

- A. Division 23 Sections

1.04 SUPPLEMENTAL SUBMITTALS

A. Product Data

1. Submit Shop Standards for metal ductwork including gages, materials, type of joints, sealing requirements, method of fabrication and reinforcing. Shop standards shall be in accordance with the SMACNA HVAC Duct Construction Standards, latest edition.
2. Submit manufacturer's product data for factory-fabricated single wall round ductwork, duct sealant and cement, gasket materials, duct liner and sound traps; and installation instructions.
3. Include American Conference of Governmental Industrial Hygienists (ACGIH) figure numbers for hoods if applicable.

B. Shop Drawings(N/A)

1.05 SUPPLEMENTAL QUALITY ASSURANCE

A. Codes and Standards

1. SMACNA Standards: Comply with SMACNA's HVAC Duct Construction Standards Metal and Flexible Third Edition-2005 for fabrication and installation of metal ductwork.
2. NFPA Compliance: Comply with the NFPA 96-1984 as amended by MC 506.
3. Comply with the New York City Mechanical Code.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Sheet Metal:

1. Galvanized Steel: Lock-forming quality; ASTM A 653 G60 coating designation; mill-phosphatized finish for surfaces of ducts exposed to view.
2. Reinforcement Shapes and Plates: Galvanized steel reinforcement where installed on galvanized, sheet metal ducts; compatible materials for aluminum and stainless-steel ducts.
3. Tie Rods: Galvanized steel, 1/4" minimum diameter for 36" length or less; 3/8" minimum diameter for lengths longer than 36".

B. Gages of Metal for galvanized rectangular duct: Gages of metal shall be in accordance with Tables 2.1 through 2.28 of SMACNA HVAC Duct Construction Standards Third Edition - 2005. Duct shall be constructed to the pressure shown on the Drawings. The duct pressure classification shall default to the equipment external static pressure if the pressure levels are not shown on the Drawings.

C. Hangers and Supports

1. Rod Type Hangers and Angles: Hot dip galvanized steel with 2 locking nuts in place.
2. Strap Hangers: Same material as ducts except that galvanized-steel straps attached to aluminum ducts shall have contact surfaces painted with zinc-chromate primer.
3. Trapeze and Riser Supports: Steel shapes complying with ASTM A36. Same material as ducts.
4. Strap and Rod Sizes: Comply with SMACNA for sheet width and thickness and for rod diameters.
5. For ducts with a cross sectional area of 2 square feet or less, hangers shall be constructed of at least 1 inch by 1/16 inch steel strap. For ducts with a cross sectional area of over 2 square feet, hangers shall be constructed of at least 1 inch by 1/8 inch steel strap.

D. Miscellaneous Ductwork Materials:

1. Sheet Metal Screws, Machine Bolts, Rivets and Nuts: Tinned, cadmium plated or rust resistant materials.

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Bolts shall be button-head stove bolts, 1/4" x 3/4" unless otherwise specified.

2. Concrete Inserts: Steel or malleable iron, galvanized; continuously slotted or individual inserts conforming with MSS SP-58, Types 18 and 19, Class A-B.
3. Beam Clamps: For ducts with a cross sectional area of 2 square feet or less, clamp shall be Caddy Catalog Number 4H-Series Fig 2. For ducts with a cross sectional area of over 2 square feet, clamp shall be Fee & Mason 255L with locking nut and 255S retaining strap.
4. Welding Studs: Erico Fastening Systems, capacitor discharge, low carbon steel, copper flashed.
5. Structural (carbon) Steel Shapes and Steel Plates: ASTM A36, shop primed.
6. Stainless Steel Shapes and Plates: ASTM A276 and ASTM A666.
7. Machine Bolt Expansion Anchors:
 - a. Non-caulking single unit type: Federal Specification: FS FF-S-325, Group II, Type 2, Class 2, Style 1.
 - b. Non-caulking double unit type: Federal Specification: FS FF-S-325, Group II, Type 2, Class 2, Style 2.
8. Duct Sealant: Non-hardening, non-migrating mastic or liquid elastic sealant, type applicable for fabrication/installation detail, as compounded and recommended by manufacturer specifically for sealing joints and seams in ductwork.
 - a. All adhesives and sealants used on the construction of ductwork shall comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168; VOC limits shall comply with the limits indicated in Table 1 of LEED Version 2.2, Indoor Environmental Quality Section, Credit EQ-4.1. Those limits correspond to an effective date of the SCAQMD Rule #1168 of July 1, 2005, and Rule Amendment date of January 7, 2005.
9. If any fiberglass duct lining is used, it shall be covered with a matte-faced neoprene covering and sealed with an acrylic polymer. Surface burning characteristics shall have a flame spread index less than 25 and smoke developed index less than

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50 per ASTM E84. Lining shall be secured with pins or mechanical fasteners. Lining that is secured with adhesive only is not acceptable. The fiberglass lining shall not support fungi or bacterial growth as per ASTM C1338, ASTM G21 and ASTM G22. Fiberglass lining shall conform to the erosion test method described in UL Publication No. 181. Fiberglass lining density shall be 1-1/2 lbs. per cubic foot, minimum of 1", unless otherwise indicated on the Drawings.

The duct lining shall have the following minimum R values:

Thickness (in)	R Value (hrft ² °F/BTU)
1	4.3
1.5	6.3
2	8.7

The minimum duct lining sound absorption coefficients shall be as follows:

Thickness (in.)	NRC
1	.75
1.5	.90
2	1.00

Approved manufacturers:

Owens Corning Aeroflex
Johns Manville Permacote Linacoustic
Certainteed Ultralite
Or approved equal

Duct liner may also be a non-erosive, open cell, fiber-free, polyimide foam material. Foam maximum thermal conductivity shall be .35 BTU/inhrft²degF. Foam surface burning characteristics shall have a flame spread index less than 25 and smoke developed index less than 50 per ASTM E84. The foam lining shall conform to the erosion test method described in UL Publication No. 181. The foam lining shall not support fungi or bacterial growth as per ASTM C1338, ASTM G21 and ASTM G22. Foam lining shall be coated with an acrylic polymer. Foam sound absorption coefficient shall be a minimum of .65 NRC for 1" lining and .80 NRC for 1-1/2" lining. The foam lining shall be Johns Manville Polycoustic or approved equal for use as a thermal/acoustical liner for metal duct systems.

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All adhesives and sealants used on the fabrication/installation of internal acoustical lining shall comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168; VOC limits shall comply with the limits indicated in Table 1 of LEED Version 2.2, Indoor Environmental Quality Section, Credit EQ-4.1. Those limits correspond to an effective date of the SCAQMD Rule #1168 of July 1, 2005, and Rule Amendment date of January 7, 2005.

2.02 FABRICATION - GENERAL

Fabricate ductwork from galvanized sheet metal of the gages specified in SMACNA HVAC Duct Construction Standards Third Edition - 2005

PART 3 - EXECUTION

3.01 SUPPLEMENTAL INSTALLATION

- A. Provide necessary transformation pieces, and flexible fabric connections (Refer to Section 233300: Duct Accessories) for ductwork connected to air handling units or air inlet and outlet devices.
- B. Field Fabrication: Complete fabrication of work at project as necessary to match shop-fabricated or factory-fabricated work to accommodate installation requirements.
- C. Where the corner of an angle iron brace or joint member projects into a walking passage, the corner shall be mitered and shall be padded with 1/2" minimum thickness flexible foamed plastic material to minimize the possibility of injury to personnel.

3.02 INSTALLATION OF DUCT LINER

- A. All adhesives and sealants used on the fabrication/installation of internal acoustical lining shall comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168; VOC limits shall comply with the limits indicated in Table 1 of LEED Version 2.2, Indoor Environmental Quality Section, Credit EQ-4.1. Those limits correspond to an effective date of the SCAQMD Rule #1168 of July 1, 2005, and Rule Amendment date of January 7, 2005.
- B. Dimensions of lined ducts indicated on the Drawings are the inside dimensions of the duct after the liner has been installed. The duct dimensions shall be increased as necessary to compensate for liner thickness.

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- C. Install as per SMACNA HVAC Duct Construction Standards, Metal and Flexible, Third Edition, 2005. Include metal nosing, etc. as required.

3.03 HANGER ATTACHMENTS

Reference: SMACNA HVAC Duct Construction Standards, Third Edition-2005 Figures 4-1,4-2,4-3.

A. General

1. Secure upper hanger attachments to structural steel or steel bar joists wherever possible.
2. Do not attach hangers to steel decks.
3. Metallic fasteners installed with electrically operated or powder driven tools may be used as hanger attachments in accordance with the SMACNA HVAC Duct Construction Standards, Third Edition-2005.

B. Attachment to Steel Frame Construction: Provide intermediate structural steel members where required by ductwork support spacing. Select steel members for use as intermediate supports based on a minimum safety factor of 5.

1. Secure upper hanger attachments to steel bar joists at panel point of joists.
2. Do not drill holes in main structural steel members.

C. Attachment to Cast In Place Concrete:

1. Secure hangers to overhead construction with self-drilling type expansion anchors and machine bolts.
2. Secure hanger attachments required to be supported from wall or floor construction with single unit expansion anchors or self-drilling type expansion anchors and machine bolts.

3.07 HANGERS FOR DUCTS, 2 INCHES W.G. AND UNDER

- A. Install hangers for ducts as specified in the SMACNA HVAC Duct Construction Standards, Third Edition-2005
- B. Prime coat plain steel rods threaded at the site immediately after installation as per Section 099000: Painting. Galvanized rods shall not be primed.

3.08 HANGERS FOR DUCTS OVER 2 INCHES W.G.

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- A. Install trapeze hangers for ducts as specified in the SMACNA HVAC Duct Construction Standards Third Edition-2005, Strap hangers shall not be used in this application.

3.09 DUCT RISER SUPPORTS

- A. Support vertical round ducts and vertical rectangular ducts as per SMACNA HVAC Duct Construction Standards, Third Edition-2005.

3.10 CONNECTIONS

- A. General Contractor shall arrange to have the connections of metal ductwork to equipment and shall provide flexible connection for each ductwork connection to equipment mounted on vibration isolators, and/or equipment containing rotating machinery. (Refer to Section 15910: Duct Accessories for flexible connectors).
- B. Coordinate as necessary to ensure that access doors have been provided in hung ceilings and any other required places for proper operation and maintenance.

3.11 ADJUSTING AND CLEANING FOR START UP AND WARRANTEE

- A. Clean dust and debris out of ductwork internally, unit by unit, as units are installed. Clean external surfaces of foreign substances that might cause corrosive deterioration of metal. Clean external surface where ductwork is to be painted that might interfere with painting or cause paint deterioration.
- B. Paint the required duct as per Section 230501: Basic HVAC Requirements.
- C. Balancing: Refer to Section 230594: Balancing of Systems for air distribution balancing of metal ductwork. Seal any leaks in ductwork that become apparent during the balancing procedure.

END OF SECTION

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SECTION 233313
DAMPERS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide dampers specified herein, shown on the Drawings, needed for a complete and proper installation. Dampers provided as part of factory-fabricated equipment are specified as part of the equipment assembly in their respective sections. Product specific requirements are contained herein; 230501, Basic Heating, Ventilating and Air Conditioning Requirements, shall be referred to for general requirements.

1.02 RELATED SECTIONS

- A. Division 23 Sections
B. Division 26 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Product Data: Submit manufacturer's product data and shop fabricated drawings. Submit charts indicating free area for flow through damper. Submit lab testing results indicating pressure drop through the dampers.
- B. Shop Drawings
1. Submit manufacturer's assembly-type shop drawings for each type of damper showing interfacing requirements with ductwork, method of fastening or support, and methods of assembly of components. Submit MEA numbers with the Shop Drawings.
 2. Fire dampers, smoke dampers and combination fire smoke dampers shall be listed and bear the label of an approved testing agency per MC 607.3.
 3. Submit fire, smoke and combination fire smoke damper installation details including sleeves and duct-mounted access doors and panels. Verify conformance with UL 555-1999, UL555S-1999 and New York City Construction and Electrical Codes. UL Classified label shall be indicated on the installation instructions. The UL listing shall be indicated on the Shop Drawings, and permanently labeled on equipment.
- C. Certification: Manufacturer's UL installation affidavit for all fire, smoke and combination fire smoke dampers.
- D. Maintenance materials (extra fusible links)

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- E. Maintenance data (spare parts lists and maintenance manuals)

1.04 SUPPLEMENTAL QUALITY ASSURANCE

A. Codes and Standards

1. SMACNA Compliance: Comply with applicable portions of SMACNA: HVAC Duct Construction Standards, Metal and Flexible, 2005 edition or later, and Fire, Smoke & Radiation Damper Installation Guide for HVAC Systems - Latest Edition.
2. UL Compliance: Construct, test, and label fire dampers smoke dampers and combination fire/smoke dampers in accordance with the 1999 editions of UL Standard 555 and UL Standard 555S.
3. All appliances regulated by the New York City Construction Codes shall be listed and labeled (reference MC 301.4, MC 301.6). Testing of material and equipment shall be in accordance with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department (MEA) before the effective date of the NYC Construction Codes may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.
4. Per NYC Mechanical Code MC 513.10, equipment utilized in Smoke Control systems such as automatic dampers and balance dampers shall be suitable for their intended use, suitable for the probable exposure temperatures and shall be as approved by the Commissioner. Components shall suitable for the probable temperature rise to which the components will be exposed. This temperature rise is as Per MC 513.10.4, automatic dampers, regardless of the purpose for which they are installed within the smoke control system, shall be listed and conform to the requirements of approved recognized standards. Per BC 909.5.2.1, ducts and air transfer openings are required to be

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protected with a minimum Class II, 250°F smoke damper complying with BC 716 when used as part of smoke control systems.

1.05 ATTIC STOCK

- A. Furnish extra fusible links to the Commissioner, one link for every 10 installed at each temperature range. Obtain receipt.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Subject to compliance with requirements, provide shop fabricated dampers or from one of the following manufacturers:

Air Balance, Inc.
Ruskin Mfg.
Greenheck Fan Corp.
Approved equal.

- B. Subject to compliance with requirements, provide fire dampers from one of the following manufacturers:

Ruskin Mfg.
Greenheck Fan Corp.
Pottorff, Div. of PCI Industries
Approved equal.

2.02 VOLUME DAMPERS

- A. Opposed Blade Dampers: Opposed blade type frames of all welded construction utilizing channel iron members in galvanized steel ducts; extruded members in aluminum ducts and stainless steel in stainless steel ducts. Fabricate frames in accordance with SMACNA HVAC Duct Construction Standards, 2005 or Latest Edition. Fabricate blades from No. 18 gage (minimum) metal of same material as duct. Single blade dampers are unacceptable for ducts over 11" in height. Blades shall be connected by a common linkage. Manual operated dampers shall have a quadrant locking device. Weld motor mounting bracket to damper frame for pneumatic or electric motor operated dampers.
- B. Parallel Blade Dampers (Ref. SMACNA HVAC Duct Construction Standards, 2005 or Latest Edition): Provide metal frames of all welded construction, utilizing channel iron members in steel ducts and extruded aluminum members in aluminum ducts. Fabricate blades from No. 18 gage (minimum) metal, of same

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material as duct. Single blade dampers are unacceptable for ducts over 11" in height. Blades shall be connected by a common linkage. Weld motor mounting bracket to damper frame for pneumatic or electric motor operated dampers. Shop coat raw ferrous parts of damper assemblies with corrosion resistant paint.

- C. Splitter dampers shall not be used. Volume control in duct branches shall be by volume dampers.
- D. Manual Damper Regulators (Ref. SMACNA HVAC Duct Construction Standards, 2005 or Latest Edition)
 - 1. For Dampers Installed in Exposed or Accessible Concealed Ductwork: Indicating quadrant with heavy metal handle and means for locking damper in all positions.
 - 2. For Dampers Installed in Inaccessible Concealed Ductwork: Concealed type with indicating regulator in cast metal box with cover plate. Provide assembly complete with duct and bearing, adjustment coupling, damper extension rods and minimum of 2 keys or socket wrenches for each type of damper adjustment screw or device.
- E. Dampers in aluminum ducts shall be aluminum, in stainless ducts, stainless steel. Fabricate blades of same material as duct in which the dampers are installed.
- F. All outdoor intake dampers and exhaust air discharge dampers terminating at an exterior louver or located outdoors shall be opposed blade low leakage type; less than 10 CFM per square foot at 2" across the damper. Include leakage test certifications with the shop drawing submission for all such dampers.
- G. All modulating dampers shall be the opposed-blade type; all two-position dampers shall be parallel-blade type. Dampers in galvanized sheet metal shall be made of galvanized sheet steel; blades shall not be more than 6" in width.

2.03 MULTI-BLADE DAMPERS AND CONTROLS (FIELD PROVIDED DAMPERS)

A. General

- 1. Self-acting or electric motor dampers used in the inlet to roof type exhaust fans shall be provided by the fan manufacturers.

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- B. Construction of Multiblade Dampers (Ref. SMACNA HVAC Duct Construction Standards, 2005 or Latest Edition)
1. Frames: Frames shall be braced for rigid reinforcement. Frames shall be provided with bolt holes for mounting and with stationary stops on the four sides to prevent air leakage. Outside air intake damper frames shall be provided with drilled lugs on two sides in a lower corner, so that motor mounting bracket can be securely bolted to frame.
 2. Blades: Damper blades shall be not wider than 9", shall have formed interlocking edges, and shall have a 1/2" deep "V" pressed in the center to stiffen the blades. Blade axles, axle clamps and blade connecting lugs shall be of non-ferrous metal. Blades shall be linked firmly together so that all blades work in unison. The lower blade shall be provided with a linkage connection lug for motor operation of the damper. Open position of the blades shall be limited to 90°. Damper blades for fan systems shall be not lighter than No. 18 gage galvanized sheet steel. Unless shown otherwise on the Drawings, damper blades for supply systems used in modulating type dampers, shall be of the opposed blade type. Outside Air Intake (OAI) shall have opposed blades. Damper blades for outside air intake shall be not lighter than No. 14 gage aluminum.
 3. Bearings: Bearings on blade pivot points shall be fitted with stainless steel or non-ferrous metal sleeve (or ferrule type) pressed into damper frame. Bearings shall be accurately sized to fit blade axles, and shall provide smooth operation.
 4. Linkage: Linkage or tie rod to interconnect blades shall be 1/4" diameter (minimum) galvanized steel or non-ferrous metal and shall be secured to the blade lugs by means of cotter pins and washers.
- C. Painting: Black iron damper frames and blades shall be given one coat of finish black paint over a prime coat. Galvanized steel damper blades and frames shall not be primed or painted. Painting shall be done at the shop.
- D. Control for Multi-blade Dampers: Refer to the Temperature Control System Sections for control of the multi-blade dampers. Outside air dampers shall be automatically controlled by means of damper actuators as specified below.

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2.04 DAMPER ACTUATORS

- A. Damper actuators shall be furnished by Temperature Control Contractor (TCC) when not provided as part of the factory assembly of the air handlers or rooftop units. TCC to coordinate with Mechanical Contractor (MC) and General Contractor (GC)

Manufacturers:

Belimo Aircontrols (USA) Inc.
Siemens Building Technologies, Inc. - Talon Controls,
(formerly by Staefa Control Systems),
Approved equal.

- B. Operation: When motor is energized, damper shall open; when non-energized, damper shall close or return to a pre-set position.
- C. Actuators (Electronic) shall be as defined in Section 15970, Temperature Control System (LonWorks DDC). Pneumatic actuators shall be as defined in Section 15972.

2.05 FIRE DAMPERS

- A. Provide 1-1/2 hour or 3 hour-fire rated damper (as required in MC Table 607.3.1 of the NYC Mechanical Code, listed under UL Standard 555-1999 of types and sizes indicated on the Drawings. Construct casings of galvanized steel. Provide fusible link rated at 50°F over the maximum temperature that is normally encountered when the system is in operation or shut down, but not less than 160°F (reference MC 607.3.1.1.1). Per MC 607.3.1.1.2, the fire damper operating temperature shall not be more than 286°F where located in a smoke control system complying with MC 513. Provide damper with positive lock in closed position. Blade Material: Steel, match casing.
- B. Each fire damper shall be supplied with factory fabricated steel sleeves and retaining angles as per SMACNA: Fire, Smoke & Radiation Damper Installation Guide for HVAC Systems - 2005 or Latest Edition and in accordance with the manufacturers' UL approved installation. Gauge of sleeve shall be at least equal to gauge of duct when one or more of the following duct sleeve connections are used: plain S slip, hemmed S slip, standing S slip, reinforced standing S slip, inside slip joint, or double S slip and other UL/SMACNA approved breakaway connections. If any other duct sleeve connections are used other than UL breakaway connections, the sleeve shall be minimum 16 gauge for dampers up to 36" wide X 24" high and 14

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gauge if width exceeds 36" or height exceeds 24. Fire damper shall have UL labels affixed to them.

- C. All fire dampers (used in purge and non-purge systems that utilize an electric temperature sensing device or resettable bimetallic link in lieu of a fusible element) shall be provided with two factory end switches, one set to close when the damper blades are at their open position, and the other set to close when the damper blades are at their closed position. Switches shall be physically linked to the damper blade.

2.06 COMBINATION FIRE SMOKE DAMPERS

- A. Provide at locations shown on the Drawings or as described in schedules, combination fire/smoke dampers meeting or exceeding the following specifications. Each combination fire/smoke damper shall be 1-1/2 hour or 3-hour fire rated under UL Standard 555-1999 and as required in MC Table 607.3.1 and shall further be classified by UL 555S-1999 as a minimum leakage Class II rated damper per MC 607.3.2. Elevated smoke temperature ratings shall not be less than 250°F per MC 607.3.2 (however the post fire purge dampers shall trip at the temperatures defined above in Article 2.06.A). Damper manufacturer shall have tested, and qualified with UL, a complete range of damper sizes covering all dampers required by this specification; having a single damper size tested and UL qualified is not acceptable. Provide access door in ducts within 6" of combination fire smoke dampers. Dampers that are not used as part of a smoke control or purge system may be static rated dampers. Dampers must operate 3 cycles at ambient temperature. Dampers must close and open within 75 seconds after 15-minute exposure to minimum 250°F elevated temperature at a "testing" airflow of 2400 fpm, 4.5 inches wc. Dampers shall "rated" at 2,000 fpm at 4.0" wc. Dampers shall include and bear a UL label in accordance with established UL labeling procedures.
- B. Combination fire smoke damper shall be qualified under UL555S-1999 to an elevated temperature of 350° F maximum temperature degradation. Appropriate electric operators shall be installed by the damper manufacturer at the time of damper fabrication; damper and operator shall be supplied as a single entity which meets all applicable UL555S qualifications for both dampers and operators.
- C. Each combination fire smoke damper shall be supplied with factory furnished heavy gage steel sleeves and mounting angles as per SMACNA: Fire, Smoke & Radiation

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Damper Installation Guide for HVAC Systems - 2005 Edition or latest (with electric motor) and in accordance with manufacturer's UL 555-1999 and 555S-1999 listing. Gage of sleeve shall be at least equal to gage of duct when one or more of the following duct sleeve connections are used: plain S slip, hemmed S slip, standing S slip, reinforced standing S slip, inside slip joint, double S slip and other UL/SMACNA approved breakaway connections. If any other duct sleeve connections are used other than UL breakaway connections, the sleeve shall be min. 16 gage for dampers up to 36" w x 24"h and 14 gage if width exceeds 36" or height exceeds 24".

- D. All combination fire/smoke dampers shall be provided with two factory end switches, one set to close when the damper blades are at their open position, and the other set to close when the damper blades are at their closed position. Switches shall be physically linked to the damper blade. Factory end switches shall be utilized by the Div 16 fire alarm system (reference Section 16720, Fire Detection and Alarm System) to provide open/closed indication on an addressable basis. Combination fire smoke damper shall have UL labels affixed to them. Fire/smoke dampers that utilize an electric temperature sensing device or resettable bimetallic link in lieu of a fusible element that are not used as part of a smoke control system or post fire smoke purge system shall be manually reset by local pushbutton switch after being subjected to elevated temperatures.
- E. Fire/Smoke dampers that are used as part of a smoke control system or post fire purge system shall have the ability to be manually overridden (re-opened) from the remote command station at the smoke purge panel after being subjected to elevated temperatures unless the maximum degradation temperature has been exceeded. All factory end switches shall be utilized by the Div 26 fire alarm system to provide open/closed indication on an addressable basis. Smoke control and purge dampers shall be dynamically rated.
- F. Where combination fire/smoke dampers are located within air ducts that are part of a smoke control system per MC 513, fusible links or other approved heat responsive devices shall have a temperature rating approximately 50 °F above the maximum smoke control system designed operating temperature but shall not exceed UL 555S-1999 degradation test temperature rating of the combination fire/smoke damper or a maximum of 350 °F (reference MC 607.3.1.1.3).

2.07 AUTOMATIC DAMPERS

- A. Install automatic dampers as indicated on the Drawings and as specified in Section 230923: Temperature Control System- DDC.

2.08 SMOKE DAMPERS

- A. Provide smoke dampers in types and sizes indicated on the Drawings, with casing constructed of galvanized steel, stainless steel jamb gasket to provide a minimum Class II fire retardant smoke seal (per MC 607.3.2), and stainless steel negator spring to assure positive closing when mounted in either vertical or horizontal position. Elevated smoke temperature ratings shall not be less than 250°F per MC 607.3.2. The damper shall close upon signal from the fire panel. Damper operators shall be electric motors equipped with instant closure clutch, linkage and motor mounting brackets. As part of the UL qualification, smoke dampers shall operate (to open and close) under HVAC system operating conditions, with "testing" pressures of at least 4.5" W.G. in the closed position, and 2400 fpm air velocity in the open position. Dampers shall be "rated" at 2,000 fpm at 4.0" wc. Damper shall have the motor mounted outside the air stream. Smoke damper shall have UL labels affixed to them.
- B. All smoke dampers shall be provided with two factory end switches, one set to close when the damper blades are at their open position, and the other set to close when the damper blades are at their closed position. Switches shall be physically linked to the damper blade. Factory end switches shall be utilized by the Div 28 fire alarm system (reference Section 283101, Fire Detection and Alarm System) to provide open/closed indication on an addressable basis.

2.09 BACK-DRAFT (RELIEF) DAMPERS

- A. Product Description: Multi-Blade, back-draft dampers: Parallel-action, gravity-balanced, Galvanized 16 gage thick steel or extruded aluminum. Blades, maximum 3 inch width, center pivoted, with felt or flexible vinyl sealed edges. Blades linked together in rattle-free manner with 90-degree stop, steel ball bearings, and plated steel pivot pin. Furnish dampers with adjustment device to permit setting for varying differential static pressure.

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PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install damper in accordance with damper manufacturer's recommendations and all applicable codes.
- B. Install access doors and fire rated access door as required.
- C. Coordinate with other work, including ductwork, as necessary to interface installation of damper properly with other work.
- D. Provide a neoprene gasket, 1/4" thick, full width of flange, wherever a galvanized duct connects to aluminum outside air intake.

3.02 INSTALLATION OF FIRE DAMPERS, SMOKE DAMPERS, AND COMBINATION FIRE/SMOKE DAMPERS

- A. All fire dampers shall be installed in ducts in the fire rated partitions, walls, floors, roof and where indicated on the Drawings
- B. All fire dampers shall be installed as per SMACNA: Fire, Smoke & Radiation Damper Installation Guide for HVAC Systems - Latest Edition and/or manufacturers' UL Classified instructions. Contractor shall obtain an affidavit from the manufacturer certifying that the UL Classified installation was adhered to. Contractor shall submit this affidavit to the Commissioner.
- C. Connection of duct to fire dampers and fire dampers sleeve shall be made in accordance with damper manufacturer's recommendations and all applicable codes.
- D. In the smoke control and post fire smoke purge systems, fire and smoke damper combination shall have remote override capability as approved by UL. The electrical contractor shall provide the control wiring of the override system.

3.03 INSTALLATION OF VOLUME DAMPERS

- A. Provide all dampers required for all systems to accomplish the intent of the Drawings. Dampers are to be installed in frames properly caulked to prevent leakage.
- B. Provide manual balancing dampers as required to properly balance the air distribution system. If

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location of balancing dampers is not defined on the drawings, the following minimum standard shall govern:

1. All supply air main branches from trunk and all sub-branches from main shall have balancing dampers.
 2. Exhaust and return main branches from trunk and all sub-branches from mains shall have balancing dampers. Balancing dampers shall not be installed in kitchen exhaust, fume hood exhaust, or breeching unless otherwise indicated.
 3. Locate dampers as far as possible from air outlet to avoid noise transmission.
 4. Install with easy access to damper, or otherwise provide remote damper actuator.
- C. Single blade dampers shall not be used for balancing unless otherwise shown.

3.03 FIELD QUALITY CONTROL

- A. Operate damper to demonstrate compliance with requirements. Test for air leakage while system is operating. Repair or replace faulty components, as required to obtain proper operation.

3.04 ADJUSTING AND CLEANING

- A. Adjusting: Adjust damper for proper settings, install fusible links in fire dampers and adjust for proper action.
- B. Label access doors.
- C. Final positioning of manual dampers is specified in Section 230594: Balancing of Systems.
- D. Cleaning: Clean factory-finished surfaces. Repair any marred or scratched surfaces with manufacturer's touch-up paint.

END OF SECTION

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SECTION 233400
CENTRIFUGAL FANS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide centrifugal fans called for in the drawing schedule and as needed for a complete and proper installation. The types of centrifugal fans specified herein are: Utility Fans, Roof Type Exhaust Fans and Inline Centrifugal Fans. Product specific requirements are contained herein; Section 230501, Basic HVAC Requirements, shall be referred to for general requirements.

1.02 RELATED SECTIONS

- A. Division 23 Sections
B. Division 26 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Product Data: Submit manufacturer's product data for centrifugal fans, including specifications, capacity ratings, fan performance curves with operating point clearly indicated, and certified fan sound-power ratings.
- B. Wiring Diagrams: Submit manufacturer's electrical requirements for power supply wiring to fan units. Clearly differentiate between portions of wiring that are factory installed and portions to be field-installed.
- C. Maintenance data.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

- A. All centrifugal fans required under this Section shall be the product of a single manufacturer.
- B. Codes and Standards
1. AMCA Compliance: Provide centrifugal fans bearing the AMCA Certified Ratings Seal. Sound rate centrifugal fans in accordance with AMCA 300.
 2. ASHRAE Compliance: Test and rate centrifugal fans in accordance with ASHRAE 51 (AMCA 210):
 3. UL Compliance: Provide centrifugal fan electrical components that have been listed and labeled by UL. Roof type exhaust fan shall be tested in accordance with UL 705.

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4. NEMA Compliance: Provide motors and electrical accessories complying with NEMA standards.
5. All appliances regulated by the New York City Construction Codes shall be listed and labeled (reference MC 301.4, MC 301.6). Testing of material and equipment shall be in accordance with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department (MEA) before the effective date of the NYC Construction Codes may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.
6. All work shall be in accordance with the NYC Construction Codes and NYC Electrical Code.

1.05 SUPPLEMENTAL DELIVERY, STORAGE, AND HANDLING

- A. Deliver centrifugal fans with factory-installed shipping skids and lifting lugs; pack components in factory-fabricated protective containers.

1.06 SITE CONDITIONS

- A. Examine the Drawings, visit the site, and take measurements to make sure that the equipment will fit in the spaces allocated.

1.07 COORDINATION

- A. Coordinate installation of equipment supports.

PART 2 - PRODUCTS

2.01 FANS

- A. General
 1. Fans shall be of type, capacity, discharge location, and rotation shown on the Drawings and constructed for Class 1 operating limits, unless otherwise indicated. Fans shall be guaranteed not to overload the motor under any condition.
 2. Select fans for the air quantities and static pressure indicated on the Drawings, of size and speed so as to

allow for a change in volume, without operating in an unstable range.

2.02 UTILITY FANS

- A. Provide utility fans of sizes and arrangement as indicated and of capacities and having accessories as scheduled and where shown on the Drawings.
- B. Fan Units: Provide factory-assembled and tested fan units consisting of housing, wheel, fan shaft, bearings, and fan drive. Clean condition and prime paint sheet metal parts prior to final assembly. Apply final coat of enamel to exterior surfaces after assembly.
- C. Housings: Construct of heavy-gauge steel with side sheets fastened to scroll sheets by means of deep lock seam. Provide round inlet collar slip joint discharge duct connection. Construct housings to be convertible to 8 standard discharges. Provide adjustable motor supports.
- D. Wheels: Provide forward curved or backward inclined wheels as scheduled. Provide swaged hubs. Balance wheels statically and dynamically.
- E. Shafts: Construct of ground and polished steel. Apply rust preventive coating.
- F. Bearings: Provide self-aligning, grease-lubricated, pillow block type bearings, selected for minimum average life (AFBMA L-50) of 200,000 hours.
- G. Motors: Provide open drip-proof high energy efficient motors with ball or sleeve bearings. Provide split phase or capacitor start motors for fractional horsepower, with resilient base. Provide induction motors for integral horsepower, with rigid base.
- H. Drive: If "Belt Drive" fans are specified on the schedules, provide multiple matched V-belt drive with minimum 1.4 times rated motor horsepower. Provide adjustable pitch sheave on motor shaft, selected for midpoint at design conditions. If "Direct Drive" fans are specified on the schedules, provide a totally enclosed motor with sealed bearing lubrication.
- I. Vibration Control: Provide as specified in Section 230549: Vibration Isolation.
- J. Accessories: Provide the following accessories as indicated and/or scheduled on the Drawings:
 - 1. Dampers: per ASHRAE 90.1-2004 Article 6.4.3.4.3, systems shall be equipped with motorized dampers that will automatically shut when the systems or spaces served are not in use. Gravity (non-motorized) dampers are acceptable in buildings less than three stories in

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height. Gravity (non-motorized) dampers are acceptable in systems with a design exhaust capacity of 300 cfm or less. Provide fans with the damper types as shown on the Drawings.

2. Access Doors: Provide gasketed access door, with latch-type handles, in fan housing.
3. Scroll Dampers: Provide single blade damper at top of fan scroll, with linkage adjustable and locked to fan housing.
4. Inlet Screens: Provide removable heavy wire mesh inlet screens on fan inlets.
5. Drain Connections: Provide 3/4" threaded coupling drain connection at lowest point of housing.
6. Weather Hoods: Provide protective weather hoods with stamped vents over motor and drive compartment.

K. Approved Manufacturers

Loren Cook Co.
PennBarry
Twin City Fan & Blower
Or approved equal

2.03 INLINE CENTRIFUGAL FANS

- A. Provide inline centrifugal fans of sizes and arrangement as indicated and of capacities and having accessories as scheduled and where shown on the Drawings.
- B. Housing: Aluminum split or heavy gauge galvanized steel housing. Square design shall include square duct mounting collars and support bracket and removable panels for access to the motor compartment on direct drive models and access to the shaft and bearing compartment on belt drive models.
- C. Direct-Drive Units: Provide ball bearing motor encased in housing out of the air stream. Provide factory wiring to disconnect located outside of fan housing.
- D. Belt-Drive Units: Provide ball bearing motor mounted on adjustable base, with adjustable sheaves. Provide enclosure around belts. Provide lubricating tubes from fan bearings to outside of fan housing.
- E. Motors shall be permanently lubricated, heavy duty ball bearing type to match with the fan load and pre-wired to the specific voltage and phase.
- F. Wheel: Provide aluminum airfoil blades on aluminum hub.

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- G. Vibration Control: Provide as specified on Section 230549: Vibration Isolation.
- H. Accessories: Provide the following accessories as indicated and/or scheduled on the Drawings:
1. Volume Control Damper: Provide manual controlled volume damper in fan outlet with quadrant and lock.
 2. Companion Flanges: Provide matching flanges on inlet and outlet to connect ductwork to fan.
 3. Fan Guards: Provide guards on inlets and outlets not connected to ductwork, constructed of expanded metal in removable frame.
 4. Speed Control: For direct drive fans, provide variable speed switch with off-on control, and speed control for 100% to 50% of fan air delivery.

H. Approved Manufacturers

Greenheck Fan Corp.
PennBarry
Loren Cook Co.
Or approved equal

2.04 ROOF TYPE EXHAUST FANS

- A. Roof type exhaust fans shall be of the power roof ventilator type complete with motor, frame, housing, and all other items and accessories. The fan wheel shall be aluminum. All other parts of the fan with which the air stream comes in contact shall be aluminum, stainless steel or reinforced fiberglass polyester plastic. The use of a heavy gage steel motor support plate protected with a baked enamel finish may be accepted.
- B. Fan Unit
1. The fan shall be capable of exhausting the cubic feet of air per minute with the static pressure, minimum wheel diameter and speed shown on the Drawings. After assembly of motor and wheel, the rotating parts shall be statically and dynamically balanced at rated speed to provide vibration free operation.
 2. The fan shall be quiet operating, backward curved centrifugal non-overload type, provided with approved type belt drive. Direct-connected fans shall be furnished only when indicated on the Drawings. Fan drives shall be sized in accordance with the manufacturer's recommendations. Belts shall be selected for at least 50% excess motor horsepower. Motor shall have an adjustable pitch driving sheave and shall be separated from the air stream. The motor shall be of size and characteristics noted on the

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Drawings with a terminal box. Wheel and motor support assembly shall be of heavy gage aluminum, galvanized steel, or steel which has been thoroughly coated with a corrosion resisting paint. Fan and motor shall be supported on vibration isolation mounts. The fan shall be provided with an inlet ring or core.

3. The frame of the unit shall be made of aluminum or stainless steel of suitable thickness to insure structural integrity of the unit. The entire unit shall be designed to provide for easy removal of the fan, motor, and all other items and accessories without disturbing the balance of the unit.
- C. Housing: The fan unit shall be provided with a closed weatherproof housing of one of the types indicated below. Hardware, screws, and all other items and accessories used in the construction of the fan housing shall be of stainless steel or non-ferrous material. Housing shall be provided with 1 brass or cadmium plated padlock where the hood is hinged, or 2 padlocks where the hood is removable. Housing shall be of such design as to form a uniform passage for air all around the rim. The air discharge openings shall be provided with wire mesh screens of 1/2" mesh, No. 16 gage copper, bronze, aluminum or PVC encapsulated bird guard with brass or aluminum screws. Screens shall be securely fastened in place with aluminum, brass or stainless steel fasteners. Where the fan design includes an integral wiring conduit, it shall be large enough to permit passage of a 3/4" conduit through it. Where an integral wiring conduit is not included, openings for the passage of 3/4" conduit (for service wiring) from base of fan into motor compartment shall be provided by the fan manufacturer. Low silhouette type housings are not acceptable. Approved type housings are:
1. Spun Aluminum: This type housing shall be fabricated from not less than No. 14 gage aluminum in wheel sizes less than No. 30.
 2. Reinforced plastic: This type housing shall be dome-shaped, molded and bonded reinforced fiberglass polyester plastic. Sizes, less than No. 21 shall have the housing made from not less than 3/32" thick plastic. Fan size No. 21 and larger shall be of greater thickness but not less than 1/8".
- D. Thermal Overload Protection: Provide starter with thermal overload protection and pilot light for each roof exhaust fan.
- E. Disconnecting Switch: Each roof type exhauster with 2-horsepower or smaller motor shall be provided with a disconnecting switch in general purpose enclosure mounted inside of the housing near the motor. Wiring between motor and switch shall be installed by the fan

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manufacturer in 1/2" (minimum size) Greenfield conduit. Disconnect switch shall be positioned in a location easily accessible for field connection of service wiring. Conduit outlet from switch shall be 3/4". Disconnect switches for single phase motors shall be 2-pole, Arrow-Hart No. 6808; for three phase motors, they shall be 3-pole, Arrow-Hart No. 7810.

- F. Dampers: per ASHRAE 90.1-2004 Article 6.4.3.4.3, systems shall be equipped with motorized dampers that will automatically shut when the systems or spaces served are not in use. Gravity (non-motorized) dampers are acceptable in buildings less than three stories in height. Gravity (non-motorized) dampers are acceptable in systems with a design exhaust capacity of 300 cfm or less. Provide fans with the damper types as shown on the Drawings.
- G. Extension for Damper: Every roof exhauster shall have an extension base at least 12" high, except for fans serving as kitchen range hood or warming pantry exhausters. Each 12" extension base shall have an inspection opening with gasket and No. 14 gage aluminum cover plate in one side of the base. Extension bases for fans with motor operated dampers shall have a weather protected access panel, with handle, of ample size to permit removal of damper unit in one side of the extension. Extension base shall be fabricated from not less than No. 14 gage aluminum sheets and shapes and shall form a rigid structural member for the fan and housing mounted upon it. Extension shall fit the roof curb and shall be secured to it with stainless steel lag screws or anchor bolts.
- H. Bearings: Bearings shall be heavy-duty self-aligning ball bearing type either permanently lubricated or equipped with fittings for grease lubrication. In the latter case, a grease gun of the proper type shall be furnished and delivered to the Commissioner.

I. Approved Manufacturers

PennBarry
Cook (Loren) Co.
Twin City Fan & Blower
Or approved equal

2.05 GAS METER ROOM EXHAUST FAN

- A. Provide an explosion proof centrifugal fan in the Gas Meter Room, of the capacity shown on the Drawings.
- B. Housing: Aluminum split housing, constructed of spun aluminum, with aluminum straightening vanes, inlet and outlet flanges, and support bracket adaptable to ceiling mounting.
- C. Direct-Drive Units: Provide ball bearing explosion proof motor encased in housing out of the air stream. Provide

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factory wiring to disconnect located outside of fan housing. All electrical items shall be explosion proof.

- D. Wheel: Wheels shall be sparkproof and non-corroding. Provide aluminum airfoil blades on aluminum hub.
- E. Vibration Control: Provide as specified on Section 230549: Vibration Isolation.
- F. Accessories: Provide companion flanges: matching flanges on inlet and outlet to connect ductwork and inlet grille to fan as shown on the Drawings.
- G. Dampers: per ASHRAE 90.1-2004 Article 6.4.3.4.3, systems shall be equipped with motorized dampers that will automatically shut when the systems or spaces served are not in use. Gravity (non-motorized) dampers are acceptable in buildings less than three stories in height. Gravity (non-motorized) dampers are acceptable in systems with a design exhaust capacity of 300 cfm or less. Provide fans with the damper types as shown on the Drawings.
- H. Approved Manufacturers

Greenheck Fan Corp.
PennBarry
Loren Cook Co.
Or approved equal

PART 3 - EXECUTION

3.01 SUPPLEMENTAL INSTALLATION

- A. Access: Provide access and service space around and over centrifugal fans as indicated, but in no case less than that recommended by manufacturer.
- B. Electrical Wiring: Install electrical devices furnished by manufacturer but not specified to be factory-mounted. Furnish copy of manufacturer's wiring diagram submittal to Electrical. Verify that electrical wiring installation is in accordance with manufacturer's submittal and installation requirements of Division 16. Ensure that rotation is in direction indicated and intended for proper performance. Do not proceed with centrifugal fan start-up until wiring installation is acceptable. Interlock wiring between fan units, and between fans and field-installed control devices. Provide control wiring between field-installed controls, indicating devices, and fan starters.
- C. Coordinate all trades to ensure that the installation of fans is not in conflict with the work performed of other trades.

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- D. Isolation: Set centrifugal fans on vibration isolators and fasten in accordance with manufacturer's installation instructions.
- E. Controls: Provide controls specified in the Temperature Control System Section.
- F. Ductwork Connections: Refer to Ductwork sections. Provide flexible connections on inlet and outlet duct connections.
- G. Roof Curbs: The prefabricated roof curb will enclose the opening of the roof exhaust fan, and be furnished with flashing and with wood sill at the top. The curbs shall be mounted directly to the roof structural surface, then roofed and flashed to the top of the wood nailer for weather tightness. The exhaust fan shall fit properly over the sill and shall be secured to it with stainless steel lag screws. The joint between the fan base and the sill shall be made air tight by means of heavy roofing felt counter flashing material. Minimum height from the bottom of the fan to the finished floor shall be 12".

3.02 FIELD QUALITY CONTROL

- A. Upon completion of installation of centrifugal fans, and after motor has been energized with normal power source, test equipment to demonstrate compliance. Where possible field correct malfunctioning equipment, then retest to demonstrate compliance. Replace equipment that cannot be satisfactorily corrected. The Contractor shall perform necessary Interdisciplinary Tests and Functional Performance Tests according to the manufacturer's procedures.

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SECTION 233616
VARIABLE AIR TERMINALS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide variable air volume (VAV) terminal units as shown on the Drawing schedules, as specified herein and as needed for a complete and proper installation. Product specific requirements are contained herein; Section 230501, shall be referred to for general requirements.

1.02 INDOOR AIR QUALITY (IAQ) REQUIREMENTS DURING CONSTRUCTION

- A. During Construction, the HVAC contractor shall comply with the indoor air quality (IAQ) requirements.

1.03 RELATED SECTIONS

- A. Division 26 Sections

1.04 SUPPLEMENTAL SUBMITTALS

- A. Product Data: Submit manufacturer's product data, including performance data for each variable air volume (VAV) terminal; schedule showing drawing designation, room location, number furnished, model number, size, and accessories; and installation and start-up instructions. Include listing of discharge and inlet ductborne sound power levels and airborne radiated sound power level. Include listing of control air requirements, if applicable.
- B. Shop Drawings: Submit manufacturer's assembly-type Shop Drawings indicating control diagram, dimensions, weight, loadings, required clearances, method of field assembly, components, and location and size of each field connection. Differentiate between manufacturer-installed and field-installed controls.
- C. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved: ceiling suspension assembly members; method of attaching hangers to building structure; size and location of initial access modules for acoustical tile; ceiling-mounted items including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.
- D. Manufacturer's warranty
- E. Submit all the digital video recordings during the training.

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F. Maintenance data

G. Certificate: Contractor's start-up and demonstration affidavit

1.05 SUPPLEMENTAL QUALITY ASSURANCE

A. Codes and Standards

1. ARI Compliance: Provide variable air volume (VAV) terminals which have been tested and rated in accordance with ARI 880-1998 with September 2002 Addendum: Industry Standard for Air Terminals or latest edition and bear ARI certification seal.

2. All components within the air stream shall conform to the maximum Flame/Smoke Contribution of 25/50 in accordance with ASTM E 84-2001.

B. All units shall be capable of maintaining their minimum and maximum set points within a maximum of + 10%.

C. The one-year warranty shall start at Substantial Completion.

D. Before submitting any equipment shop drawings for approval, the HVAC Contractor, Automatic Temperature Controls Contractor and the Equipment Vendor and Manufacturer shall coordinate the controls required for the system.

1.06 COORDINATION

A. Coordinate layout and installation of variable air terminals and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Approved Manufacturers

Carrier Corp.
Titus Products Div.
Trane (The) Co.
Approved equal

2.02 MATERIALS

A. Factory assembled cataloged certified and tested pre-manufactured units of the sizes and capacities shown on

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the Drawings with a normally open pneumatic operator or LonWorks digital controller and velocity sensor for pressure independent operation. Locate all controllers/motors on the box exterior for ease of adjustment and repair.

- B. All adhesives and sealants used on fabrication of VAV boxes shall comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168; VOC limits shall comply with the limits indicated in Table I of LEED Version 2.2, Indoor Environmental Quality Section, credit EQ-4.1. Those limits correspond to an effective date of the SCAQMD Rule #1168 of July 1, 2005 and Rule Amendment date of January 7, 2005.
- C. Variable Volume, Direct Digital Control:
1. Unit shall consist of primary air valve, radiated noises shroud, and DDC control system. The casing shall be fabricated of 22 gage galvanized steel. Interior surface of unit casing shall be acoustically and thermally lined with 1" non erosive fiber free flexible, open-cell insulation the equal to Johns Manville Polycoustic Duct Liner which conforms to erosion test method described in UL Publication No. 181 and smoke developed and flamespread requirements of MC 604.3. Fiberglass lining is also acceptable (Johns Manville Linacoustic duct liner or approved equal) providing that it is covered with matte facing and sealed with acrylic coating.
 2. The primary air valve shall be a cylindrical flow control device with an integral electric actuator. Valve inlet is die cast aluminum and tapered to fit standard round flexible ductwork. Maximum leak rate is 1% at 4" wg. inlet static pressure. Integral multiple point, averaging flow sensing ring to provide primary air flow measurement within + 10% of unit rated airflow with 1-1/2" diameters of straight duct upstream of unit. Integral flow taps shall be provided on each unit.
 3. Minimum and maximum air volume shall be factory set and field re-adjustable.
 4. Primary Air Volume Controller:
 - a. Automatic averaging CFM sensing tubes at unit inlet.
 - b. Flow chart shall be used for adjustment of maximum and minimum CFM affixed to each unit.
 - c. Schematic Drawings indicating proper hook-up affixed to each unit.

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- d. If pneumatic controller is not used, digital controller shall be native LonWorks.
- 5. Radiated sound levels shall not exceed NC 35 at 1.0" w.g. inlet static pressure. Radiated NC value shall include a 10 dB room attenuation.
- E. The Temperature Control Contractor shall furnish all LonWorks controllers to the VAV box manufacturer for factory installation. Other methods of providing the controllers (example: OEM furnishes and installs native LonWorks controllers or TCC furnishes and field installs native LonWorks controllers) are to be coordinated by the GC, Mechanical Contractor and TCC, Temperature Controls Contractor.
- F. Access: Provide removable panels in casings to permit access to air dampers and other parts requiring service, adjustment or maintenance. If installed in a hung ceiling, provide access door in the ceilings. (Refer to Section 08305: Access Doors).

2.03 VAV TERMINAL UNIT CONTROL POINTS

- A. Temperature Control Contractor shall provide integration of monitoring and alarm functions by providing control points as indicated in Section 230993 and as shown on the control drawings.

PART 3 - EXECUTION

3.01 SUPPLEMENTAL INSTALLATION

- A. Install in accordance with manufacturers written installation instructions and so as to be easily removed for repair or replacement.
- B. Support terminal unit independent of ductwork.
- C. Install terminal units to provide maximum clearance to volume controller.
- D. Provide DDC control wiring between fields installed controls and VAV terminals, and coordinate the terminal controls with the Temperature Control System.
- E. Flexible duct connections at inlet and outlet at terminal box are not permitted unless in plans or specifications for project.
- F. Provide access doors in non-accessible hung ceilings and elsewhere to access those units

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3.02 FIELD QUALITY CONTROL

- A. Upon completion of installation and prior to initial operation, test and demonstrate that VAV terminals, and duct connections to VAV terminals, are leak-tight. The Contractor shall perform necessary Interdisciplinary Tests and Functional Performance Tests according to manufacturer's procedures.

3.03 TRAINING

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel as specified below:
1. Train maintenance personnel on procedures and schedules related to startup and shutdown, troubleshooting, servicing, and preventive maintenance. Contractor shall submit written affidavit indicating that all equipment is operating as designed.

3.04 INTERDISCIPLINARY TESTS AND FUNCTIONAL PERFORMANCE TESTS

- A. Interdisciplinary Pre-Start-Up and Start-Up Tests:

The Contractor shall conduct interdisciplinary pre-start up and start up tests as per the manufacturer's start up procedures. Contractor shall submit signed start up affidavit signed by the factory authorized service representative indicating that all of the manufacturer's pre-start up and start up procedures have been successfully completed.

- B. Functional Performance Tests:

Contractor shall also submit signed functional performance testing affidavit signed by the factory authorized service representative indicating that all of the manufacturer's functional performance tests have been successfully completed.

END OF SECTION

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DESECTION 235100
BREECHING, CHIMNEYS, AND STACKS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide field fabricated single wall metal breeching for non-condensing boilers from point of connection at boiler to existing chimney. Provide stainless steel chimney liner at existing brick chimney. Product specific requirements are contained herein; Section 230501, Basic HVAC Requirements, shall be referred to for general requirements.

1.02 RELATED SECTIONS

- A. Division 23 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Shop Drawings

1. Submit shop drawings showing fabrication and installation details for breeching. Include plans, elevations, sections, details, and attachments. Detail assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, hangers and location and size of each field connection. Shop drawings shall indicate:

- a. Layout of each boiler/breeching.
- b. Details of the assembly of the stainless steel liner into the existing chimney.

- B. Certified Sizing Calculations: Manufacturer shall certify venting system sizing calculations.

- C. Quality Control Submittals

1. Certificates: Submit certificates of materials compliance with specified ASTM, UL, and ASHRAE requirements.
2. Certificates: Submit Welder's Qualification Certificates.

- D. New York City Building Department: Submit copy of all approved plan and permits.

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- E. New York City Department of Environmental Protection: Submit copy of Bureau of Air Resources approval of application and plans.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

- A. Welder's Qualifications: All welders shall be certified in accordance with AWS Standard D9.1, Specifications for Welding Sheet Metal.

B. Codes and Standards

1. NFPA: Comply with NFPA 211: Standard for Chimneys, Fireplaces, Vents and Solid Fuel Burning Appliances.
2. UL: Comply with applicable portions of UL safety standards; provide products which have been UL listed and labeled.
3. AWS: Comply with AWS Structural Welding Code for welder's qualifications, welding details, and workmanship standards.
4. ASHRAE: Comply with the ASHRAE Equipment Handbook, for Chimney, Gas Vent, and Fireplace Systems, material requirements and design criteria.
5. Comply with the City of New York **Construction Codes** and the State of New York Building Code and any other public authorities having jurisdiction.
6. Testing of material and equipment shall be in accordance with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department (MEA) before the effective date of the NYC Construction Codes may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.
7. The installation, alteration, maintenance, design, minimum safety requirements, repair and approval of factory built chimneys, chimney liners, vents and connectors, field built chimneys and connectors and

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utilization of masonry chimneys shall be in accordance with Chapter 5 of the NYC Fuel Gas Code, Chapter 8 of the NYC Mechanical Code and Chapter 21 of the NYC Building Code.

1.05 SUPPLEMENTAL WARRANTY

- A. All warrantees shall use the date of Substantial Completion as the start date.

1.06 SITE CONDITIONS

- A. Should conditions at the site necessitate a change in the arrangement of the breaching from that shown on the previously approved shop drawings, submit for approval a detailed revised shop drawing (to scale) of the proposed change. This drawing shall also indicate the relationship of the breaching to piping, lights, and all other items and accessories.

PART 2 - PRODUCTS

2.01 SINGLE WALL SMOKE BREECHING

- A. Boiler smoke breaching shall be constructed of not lighter than No. 12 gauge black steel sheets with welded seams. Breaching shall be fabricated in sections with 1-1/2" x 1-1/2" x 3/16" steel angles welded to the 12 gauge black steel sheet at the ends of each section (for the purpose of bolting the sections together). Reinforce rectangular breechings that exceed 5' in length with 1-1/2" x 1-1/2" x 1/4" steel angle braces in the center of the sections. Angles shall be welded to the 12 gauge black steel sheet. Provision shall be made for expansion and contraction of breaching at the chimney opening. Fabrication and assembly shall be gas-tight.
1. Provide 1" x 1" x 1/8" steel angles on 3' centers welded to the bottom surface of the breaching, parallel to the section ends, to support the wire lath which is part of the breaching insulation system. The projecting leg of each such angle shall have 1/8" diameter holes punched and drilled on 8" maximum centers.
 2. Provide test openings and means of closing same in each boiler breaching, as required by the Department of Air Resources. Provide a 3" high steel collar to serve as an insulation stop around each test opening. Area enclosed by collar shall be 4" x 4". Where multiple test openings occur close together, a single collar shall be provided, which shall be located 2" from the openings,

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on each side. Collar shall be not higher than No. 16 gage and shall be welded to the breeching.

- B. Accessories and Specialties: Provide accessories and specialties of types and sizes required to comply with breeching requirements including proper connection of equipment:
1. Cleanout Doors: Same gauge as breeching; size, quantity and location as indicated on the Drawings or as outlined in NYC DEP BAR Code. Doors shall have steel or cast iron frames and shall be fitted with hinges and catches.
 2. Expansion Joints in Smoke Breeching: Provide expansion joints in the smoke breeching. Packing shall be made of asbestos free material, Carborundum Co.'s "Fiberfrax Square Braid." or approved equal.
 3. Anchor: Smoke breeching shall be anchored with two 2-1/2" x 2-1/2" x 1/4" structural steel angles fastened from each side (i.e. top and bottom of the breeching) to an overhead beam with expansion bolts. Supporting hangers shall be 3/4" minimum diameter steel rods and shall be placed not more than 8' apart. 2-1/2" X 2-1/2" X 1/4" angles shall not be riveted or welded to breeching in order to allow thermal longitudinal growth. The 2-1/2" X 2-1/2" X 1/4" angles serve as stiffening angles at the supports. Calcium silicate insulation is to be interrupted at the location of the stiffening angles.
 4. Draft Sequence Damper: The multiple opposed blade type damper shall be designed to maintain a constant pressure and shall be suitable for mounting in the breeching between the boiler smoke outlet and chimney inlet. The damper shall have a free cross sectional area at least equal to that of the breeching it is installed in. The damper shall be suitable for operation with flue gas temperatures up to 750°F and shall have opposed action louvers with ball bearings or sintered type 316 stainless steel sleeve bearings mounted on outside damper casing. Damper frame shall be 10 gage steel and damper blades of 10 gage steel with high temperature aluminum paint finish. The damper shall have heat insulating pads between the casing and the bearing. No heat insulating pads shall be required if the dampers are fabricated using the two sintered type 316 stainless steel sleeve bearing per blade. The damper rod shall be welded to the control arm and shall be provided with marking to clearly indicate the damper position. Damper shall be by Energy Cair, Inc. or approved equal.

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- a. Provide an automatic actuator of the linear acting type for each sequence damper located in the boiler smoke breeching. Actuator shall have sufficient power to open and close a damper, equal to a 100-pound weight, continuously without overloading. Motor shall be equipped with safety and limit switches and with permanently lubricated, sealed ball bearings.
- b. Installation position (vertical or horizontal) of actuator shall be in accordance with manufacturer's recommendation. A 1/8" (minimum thickness) heat insulating gasket of non-asbestos material shall be installed between the actuator brackets and the breeching support.
- c. Automatic damper actuator shall be Cleveland Controls, Inc. Model LF-AS-E, Preferred Instruments No. PL-2, or approved equal conforming to the requirements of this Specification and approved by the New York City Board of Standards and Appeals. (Refer to Supplemental Quality Assurance Article 1.05.B.7).
- d. Blade stops shall be provided at top and bottom of damper housing, which shall be formed from not lighter than No. 10-gauge black steel. The damper shall be provided with stops for safe closed position.
- e. Safe closed position of damper shall be understood to mean that the damper blade shafts have been rotated approximately 70° from the fully open position; there shall always be some opening for any vapor that may collect in the combustion chamber between burner cycling, to escape to the chimney.
- f. Provide a reference mark on the damper assembly representing the safe closed position, as described above and verify compliance in the field during start-up testing.

2.02 STAINLESS STEEL CHIMNEY/STACK LINER

- A. Materials: 10 gauge stainless steel Type 304 welded air tight. Angle bracing and stainless steel plates at top and bottom to prevent side sway with free vertical movement. Provide heat resistant fiber gasket for airtight seal.

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B. Accessories: Provide accessories bearing UL label.

1. Base Section: Provide anchor lugs for securing stack liner to foundation.
2. Cleanout Section: Provide smoke-tight cleanout section with gasketed and bolt-tightened cleanout doors.
3. Cleanout Doors: Same gage and material as the liner; size, quantity and location as outlined in NYC DEP BAR Code. Doors shall have steel or cast iron frames and shall be fitted with hinges and catches.
4. Tee or Wye Section: smoke-tight tee or wye as indicated for gas-fired duct furnaces and hot water breeching connection, with welded joints finished with smooth transition.

C. Fabrication:

1. Fabricate sections, fittings, and accessories as individual pieces or in combination lengths for field handling.
2. Provide tumble type of flashing over the brick chimney or top of chase.
2. Fabricate liner with anchor lugs, cleanout, T-sections, flashing and counterflashing, and provisions for support, expansion, and contraction.

D. Manufacturers:

Selkirk Metalbestos
Olympia Chimney Supply
Metal-Fab
Approved equal.

PART 3 - EXECUTION

3.01 SCHEDULE

- A. Boiler (non-condensing) Projects: Boiler Breeching: Breeching shall be single wall construction as specified in Article 2.01 and additionally insulated with 1-1/2" minimum thick calcium silicate.

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- B. Boiler (non-condensing) Projects: Stack For Boiler: Stainless steel liner as specified in Article 2.02 installed in existing chimney.

3.02 SUPPLEMENTAL INSTALLATION

A. Single Wall Boiler Smoke Breeching:

1. Weld steel angles on the breeching in conformance with AWS workmanship standards of AWS D 9.1, Specification for Welding Sheet Metal. Prefabricate as much as possible using factory shop welds. Field welds should to be kept to a minimum.
2. Align breeching accurately at connections, with a smooth internal surface and a 1/8" misalignment tolerance.
3. Support breeching from overhead beams. Stiffening angles at support shall be 2-1/2" x 2-1/2" x 1/4" steel. Supporting hangers shall be 3/4" minimum diameter steel rods and shall be placed not more than 8' apart. Where, because of location of the breeching relative to overhead beams and field conditions, auxiliary steel is required for the support of the breeching, such auxiliary steel beams shall be provided.
5. Install accessories, dampers, and controls.
6. Install the boiler smoke breeching, where shown on the Drawings, extending from the boiler's smoke outlets to the openings in the chimney flues with angle frames or collars to receive the smoke breeching. Install cleanout doors near the bottom of the stack. Insulate breeching as per Section 230702: Equipment Insulation (HVAC).

C. Stainless Steel Lining for existing chimneys.

1. Install the stainless steel liner as indicated on the approved Shop Drawings, extending from the chimney base to the roof with angle frames or collars to receive the linings and the cleanout doors near the bottom of the chimney.
2. Assemble and erect lining sections and accessories in compliance with UL listing. Connect base section to foundation using anchor lugs of size and number shown on the Shop Drawings.
3. Joints: Weld joints. Comply with the workmanship quality standards specified in AWS D9.1, Specifications for Welding of Sheet Metal.

3.03 SUPPLEMENTAL ADJUSTING, CLEANING AND TESTING

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- A. Clean breechings, chimneys and stacks internally during installation, to remove dust and debris. Clean external surfaces to remove welding slag and mill film. Grind welds smooth.

A smoke test shall be performed in accordance with the New York City Building Code Section 1704.24. Chimney Connectors (breeching) shall be subject to Special Inspection per New York City Building Code Section 1704.23. Chimneys shall be subject to Special Inspection per New York City Building Code Section 1704.24. The DCLA representative shall witness all smoke tests. Perform the tests when building is not occupied. Isolate the boiler from the tests. No work shall be covered or concealed before testing. The Contractor shall be responsible for inserting temporary plugs (plates, caps, etc.) in all openings, connecting a blower and providing instrumentation (static pressure taps, etc.). The DCLA's Special Inspector shall provide smoke machines, smoke bombs, or other equivalent methods to fill the chimney and breeching with a thick penetrating smoke. As the smoke appears at the stack opening on the roof, such opening shall be tightly closed and a pressure equivalent to one-half inch column of water measured at the base of the stack, shall be applied. Test shall be applied for a length of time sufficient to permit inspection of the chimney. If the test shows any evidence of leakage or other defects, such defects shall be corrected and the test shall be repeated until the results are satisfactory.

END OF SECTION

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SECTION 235201
BOILER ACCESSORIES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide accessories associated with the boilers as needed for a complete and proper installation. Product specific requirements are contained herein; Section 230501, Basic HVAC Requirements, shall be referred to for general requirements.
- B. Boiler accessories specified in this Section include water safety relief valves.

1.02 RELATED SECTIONS

- A. Division 23 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Submit detail of gag for the safety relief valves.
- B. Maintenance data

1.04 SUPPLEMENTAL QUALITY ASSURANCE

- A. Codes and Standards: ASME Compliance: Construct and install boiler accessories in accordance with ASME: Boiler and Pressure Vessel Code. Install boiler accessories in accordance with ASME B 31.1: Power Piping, or ASME B 31.9: Building Service Piping, as applicable. Comply with requirements of NYS and NYC Boiler Codes.

PART 2 - PRODUCTS

2.01 MATERIALS AND MANUFACTURERS

- A. Safety and Relief Valves:
 - 1. Water Relief Valves:
 - a. Pressure Relief Valves: Construct of bronze body, metallic disc, metal seat, with nonmechanically guided stem. Set valve to relieve at 15 psig above operating pressure.

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b. Approved Manufacturers:

Amtrol, Inc.
Bell & Gossett ITT.
Watts Regulator Co.
Or approved equal.

PART 3 - EXECUTION

3.01 SUPPLEMENTAL INSTALLATION

A. Safety and Relief Valves

1. Water Relief Valves: Install on top of boilers.
Pipe discharge to floor drain.

3.02 FIELD QUALITY CONTROL

- A. Flush and clean boiler accessories upon completion of installation, and in accordance with manufacturer's installation instructions.
- B. Hydrostatically test, if required, assembled boiler accessories and piping in accordance with applicable sections of ASME Boiler and Pressure Vessel Code.

END OF SECTION

SECTION 235223
CAST-IRON BOILERS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide equipment for complete installation of low pressure, forced draft, cast-iron, sectional, hot water, natural gas boilers as shown on the Drawings. Product specific requirements are contained herein; Section 230501, Basic HVAC Requirements, shall be referred to for general requirements.

1.02 RELATED SECTIONS

- A. Division 23 Sections
B. Division 26 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Product Data: Product data package shall indicate that the boiler is listed as an assembly by Underwriters' Laboratory Inc.
- B. Shop Drawings:
1. Gas Piping Diagram.
 2. Wiring Diagrams: Submit manufacturer's electrical requirements for power supply wiring to cast-iron boilers. Submit manufacturer's wiring diagrams for interlock and control wiring required for final installation of cast-iron boilers and controls. Clearly differentiate between portions of wiring that are factory-installed and portions to be field-installed.
- C. Test Report:
1. Submit a factory inspection report prior to shipping along with all the tests performed at the factory.
 2. Submit a field inspection report prior to placing the boiler in operation along with all the tests performed at the site.
 3. Submit factory certified prototype test reports for combustion efficiency.
- D. New York City Building Department: Submit a copy of all approved permits and **Certificate of Compliance** from the Department of Buildings, Fire Department, Department of Environmental Protection (Air Resources), Department of

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Highways, and any other department having jurisdiction. Contractor shall obtain permit from the DEP for boilers with fuel input equaling or exceeding 2,800,000 BTUH.

E. Certificate:

1. Compliance with DEP Bureau of Air Resources/DOB Requirements:
 - a. Submit UL 726 listing for oil burning boilers, UL 795 listing for gas burning boilers, UL 726 and UL 795 listings for boilers with dual fuel burners.
 - b. Submit affidavit whether or not the boiler-burner combination is marketed as an Assembly.
 - c. Submit UL-A or ETL listing for the burner.
 - d. Submit UL-B or UL-C if required for boilers (See Supplemental Quality Assurance).
2. Furnish 2 copies of a certificate of test and inspection issued by the boiler inspector who shall be employed by a state agency having jurisdiction or by an insurance company specializing in work of this nature and acceptable to the City of New York.
3. Provide certificate of Hydrostatic Test of boilers and **Certificate of Compliance** - (DOB Boiler Division).

F. New York City Building Department: Submit copy of all affidavits and approved forms.

G. Contract Closeout Submittals:

1. Submit **factory certified** prototype testing **reports indicating** that all boiler/burner combinations have the following minimum combustion efficiencies as **defined below in Table A:**

<u>Type of Boiler</u>	<u>Type of Fuel</u>	<u>Minimum Combustion Efficiency Percentage (%)</u>
Cast Iron	Natural Gas	83

2. Submit operating instruction manuals, complete with schematic wiring and piping diagrams for the boiler, all combustion and operating controls.
- H. Provide a set of Manufacturer's guarantees for the boiler, burner and other fuel burning systems.

- I. Videotapes produced during the training.
- J. Certificate: Contractor's start-up and demonstration affidavit.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

A. Codes and Standards:

1. I=B=R Compliance: Provide cast-iron boilers that have been tested and rated in accordance with Institute of Boiler and Radiator Manufacturers (I=B=R): Testing and Rating Standard for Cast-Iron and Steel Heating Boilers, and bear I=B=R emblem on nameplate affixed to boiler.
2. NFPA Compliance: Install gas-fired cast-iron boilers in accordance with NFPA Code 54: National Fuel Gas Code.
3. ASME Compliance: Construct cast-iron boilers in accordance with ASME Boiler and Pressure Vessel Code, Section IV: Heating Boilers.
4. UL and NEMA Compliance: Provide cast-iron boiler ancillary electrical components which have been listed and labeled by UL, and comply with NEMA standards.
5. Insurance Company Compliance: Provide gas train, control devices and control sequences in accordance with requirements of Industrial Risk Insurers (IRI).
6. Boilers shall be approved by the NYC Department of Environmental Protection (Air Resources), and shall be listed and labeled in accordance with UL 795 for gas per to MC 1004.1, FGC 631.1 and 2007 NYSECCC . (Gas fired boilers may alternately be listed and labeled in accordance with ANSI Z21.13 where input is greater than or equal to 300,000 BTUH and less than or equal to 2,500,000 BTUH). The UL listing shall be indicated on the Shop Drawings, and labeled on equipment.

Boiler **shall** comply with all the requirements of the City of New York, the State of New York, local utility, and any other public authorities having jurisdiction.

7. Before submitting any equipment shop drawings for approval, the Contractor, the Equipment Vendor and Manufacturer shall coordinate the controls required for the system.
8. Minimum Combustion Efficiency: Minimum Combustion efficiency shall be as indicated in Table A above for

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the prototype when tested according to the referenced test procedures to determine efficiency for commercial space heating boilers.

At the time boiler shop drawings are submitted, the Contractor shall also furnish a report certifying that a prototype boiler of the same construction type, fuel type and using the same burner as specified for this project has been tested in the factory in accordance with the requirements of Table A. This report shall include all test data that confirms that the requirements of Table A have been met.

9. DEP Bureau of Air Resources Assembly Requirements:
 - a. Per DEP Bureau of Air Resources, all burners shall be UL-A listed or ETL listed.
 - b. A UL assembly listing is required for boiler-burner combinations marketed by the manufacturer as an assembly (regardless of the heat release rate) where a given boiler manufacturer/type is always paired with given burner manufacturer(s).
 - c. A UL assembly listing is required if the following heat release rate is exceeded:

Cast Iron boiler: 40,000 BTU/H
 - d. Per DEP BAR, a UL assembly listing can be achieved in one of two ways. If the boiler-burner combination is always provided with a specific boiler manufacturer/type paired to a specific burner manufacturer, a UL-B listing is required. If the bare boiler can be provided with various specific UL-A or ETL listed burners, the bare boiler requires a UL-C listing.
 1. Field erected boilers that require the UL assembly listing, require a UL-C listing.
 2. Manufacturer shall submit affidavit whether or not the boiler-burner combination is marketed as an assembly.
 - e. Refer to Engineering Criteria Fuel Oil Burning Equipment code issued by the City of New York - Department of Air Resources (1973).
10. NYSECCC Compliance - boilers shall meet the minimum efficiency requirements of the New York State Energy Conservation Construction Code.

11. All appliances regulated by the New York City Construction Codes shall be listed and labeled (reference MC 301.4, MC 301.6). Testing of material and equipment shall be in accordance with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department (MEA) before the effective date of the NYC Construction Codes may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.

1.05 MANUFACTURER WARRANTY

- A. Boiler guarantee shall be for ten years. The guarantee period start date shall be the date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MATERIALS AND MANUFACTURERS

- A. Forced draft, Cast Iron, Sectional, Gas-Fired Boilers:
 1. Provide natural gas, atmospheric cast-iron boiler of capacity indicated.
 - a. Boiler: Construct of cast-iron sections with integral base, sealed with high temperature rope for gas-tight construction, factory-assembled and tested.
 - b. Provide for hot-water boilers: ASME safety valve, combination high- and low-limit controls, and combination pressure-temperature-altitude gauge.
 - c. Accessories: In addition to above, provide the following accessories:
 - 1) Pressure / Water level controls.
 - 2) Low water cutoff and feeder combination.
 - 3) Draft damper.
 - 4) Side inspection openings with plugs.

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- 5) Draft sensing line, per B.A.R.
- d. Burner: Provide flame retention power burner for natural gas as specified in Section 235224: Fuel Burning/Pumping Equipment. Provide burner and factory-wired control panel for operation as required.
- B. Every boiler shall have a shutoff valve in the supply and return piping.
- C. A remote control shall be provided to stop the flow of gas and combustion air to any burner or fuel burning internal combustion equipment. Such control shall be located outside all means of egress to the room in which the burner or equipment is located and as close to such entrances as practicable. All such controls shall be labeled: "REMOTE CONTROL FOR BURNER". (Refer to MC 1006.8.1).
- D. Approved Manufacturers:
- Smith (The H. B.) Co., Inc.
Weil-McLain;
A Marley Co.
Or approved equal.

2.02 HOT WATER BOILER TRIM

- A. Hot Water Connections: Supply and return connection shall provide internal thermal circulation that will mix return water with hot water in boiler.
- B. Dip Tube: Provide as integral part of the hot water outlet, an air vent tapping in boiler shell for removal of entrained air.
- C. Low water pressure cutoff with manual reset: pressure sensor linked to burner control circuit to prevent burner operation if boiler water pressure inside boiler falls below safe level recommended by Manufacturer.
- D. Dial type combination pressure and temperature gauge or a separate pressure gauge and thermometer. Gauges shall be of the dial type, minimum of 4" in diameter, and if separate gauges are installed, both gauges shall be located where they may be easily observed and read, adjacent to the hot water outlet.
- E. Water relief valves of type and size to comply with ASME Code requirements.

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- F. Temperature controls - high limit (manual reset), operating limit (auto reset) & firing rate control - to regulate burner operation; mount temperature sensing elements adjacent to hot water outlet.
- G. Pressure controls: High pressure limit control.
- H. Provide for constant circulation through the boiler to minimize thermal stresses. The failure of circulating pump shall cause the boiler to be shut down, requiring manual reset.

2.03 INSPECTION

- A. The boilers shall be inspected during construction in the shop of the manufacturer by an inspector of an approved boiler insurance company, or of a State Labor Department, and NYC Department of Building Boiler Division. After completion of construction, each boiler shall be successfully tested at the shop at 60 psi hydrostatic pressure and in field at Code required pressures. The boiler shall be stamped legibly with all identifying marks and symbols, the manufacturer's name, the allowable working pressure in pounds per square inch, the year of manufacture, and all other markings required by the latest editions of the New York State and the ASME Boiler Codes.
- B. Furnish and deliver in duplicate, one copy to the City of New York and one copy to the Boiler and Licensing Division of the Department of Buildings of the City of New York, a certificate of test and inspection for each boiler issued by the boiler insurance company or State Labor Department which made the inspection. These certificates shall furnish all data required by the New York State and ASME Codes.

2.04 BOILER CONTROL POINTS

- A. Boiler manufacturer shall provide integration of monitoring and alarm functions by providing control points as indicated on the drawings. Boiler manufacturer shall provide gateway to convert from their protocol to the LonWorks Protocol (LonTalk).

PART 3 - EXECUTION

3.01 SUPPLEMENTAL INSTALLATION

- A. General
 - 1. The Contractor shall comply with Department of Buildings Regulations concerning the installation of the boilers,

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and shall file with that department all required information before starting the boiler installation.

2. Install boilers in accordance with manufacturer's installation instructions, in accordance with New York State and City Code requirements, and in accordance with requirements of local Utility Company. Install units plumb and level. Maintain manufacturer's recommended clearances around and over boilers.
 3. Per MC 1004.3, clearances shall be maintained around boilers, heaters and tanks and related equipment and appliances so as to permit inspection, servicing, repair, replacement and visibility of all gauges. When boilers are installed or replaced, clearance shall be provided to allow access for inspection, maintenance and repair. Passageways around all sides of boilers shall have an unobstructed width as required by the manufacturer and in no case less than 18 inches.
 4. Approved piping and wiring diagrams and installation instruction shall be obtained from the manufacturer and followed in the installation of the boilers.
 5. Install boilers/burners in accordance with State Code, New York City Code and Local Utility Company Requirements.
 6. Each boiler/burner unit shall be electrically grounded as specified and recommended by the manufacturer and regulatory agencies.
- B. Support: Install boilers on 4" thick concrete pad. Boiler shall be provided with legs on a base to maintain a space between the bottom of the boiler sections and the concrete boiler base, for natural ventilation.
- C. Erection: Assemble boiler sections in proper sequence and with sealing between each section. Assemble boiler trim shipped loose, or unassembled for shipment purposes. Follow manufacturer's installation instructions.
- D. Electrical Work: Install electrical devices furnished by manufacturer but not specified to be factory-mounted. Furnish copy of manufacturer's wiring diagram submittal to Electrical.
1. Furnish the burner emergency break-glass shutoff switch for installation as defined in Section 262419, Motors, Motor Control Centers, Starters and Control Equipment.

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2. The Contractor shall provide control wiring between boiler control panel and thermostats, aquastats, pressurestats, or any other control device. The Contractor shall provide DDC controller and wiring between boiler control panel and DDC controller.
3. Provide factory-mounted and wired controls and electrical devices as specified in this section.
4. Refer to Electrical sections for all electrical work including motor starters, disconnects, wires/cables, raceways, and other required electrical devices not supplied by the manufacturer but required.
5. Verify that electrical work installation is in accordance with manufacturer's submittal and installation requirements of Electrical sections. Do not proceed with equipment start-up until electrical work is acceptable to the Commissioner and Boiler Manufacturer's Representative.
6. The Contractor shall provide liquid tight flexible metal conduit (Sealtite) for final conduit connections to all the motors.

E. Miscellaneous

1. Connect gas piping to boiler, full size of boiler gas train inlet as a minimum. Provide union with sufficient clearance for burner removal and service.
2. Hot Water Piping: Refer to Section 230503: HVAC Piping. Connect supply and return boiler tapping as indicated, with shutoff valve and union or flange at each connection.
3. Breeching: Refer to Section 235100: Breeching, Chimney, and Stack. Connect breeching to boiler outlet, full size of outlet. Route as indicated.

3.02 FIELD QUALITY CONTROL

- A. Flush and clean cast-iron boilers upon completion of installation, in accordance with manufacturer's start-up instructions.
- B. Hydrostatic Test
 1. The Contractor shall arrange for tests of the boilers at the rated hydrostatic pressure by the Department of Buildings, and shall pay all fees involved. He or she shall notify the Commissioner or building manager by letter, at least 48 hours in advance of the time at which such tests are to be made.

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2. A certificate of the Department of Buildings test shall be obtained by the Contractor, and shall be delivered to the Commissioner immediately after the boiler tests have been completed.
- C. Start-up cast-iron boilers, in accordance with manufacturer's start-up instructions, and in presence of boiler manufacturer's representative. Test controls and demonstrate compliance with requirements. Replace damaged or malfunctioning controls and equipment.
- D. The Commissioner and/or building manager shall witness operation of all safety valves at rated pressure.

3.03 DEMONSTRATION

- A. Preliminary Requirements: Provide the services of the field service representative of the boiler manufacturer for the following:
 1. Inspect each boiler installations prior to start-up.
 2. Supervise initial firing of boilers.
 3. Instruction of City of New York Designated Personnel.
- B. Instruction of City of New York Designated Personnel: The manufacturers' representative shall instruct the building manager in the operation and maintenance of the boilers and all items and accessories. Provide a minimum of 40 hours for instruction purposes, exclusive of all pre-start-up, start-up and service call time. Training of personnel shall be videotaped by the trainer (or Contractor).
- C. Start-up: The Contractor shall perform necessary Interdisciplinary Tests and Functional Performance Tests according to the manufacturer's procedures.
 1. Replace damaged or malfunctioning controls and equipment.
 2. Perform services in accordance with manufacturer's written start-up instructions.
- D. Maintenance and Operation Training
 1. The Contractor shall prepare a detailed, coordinated step-by-step maintenance and operations manuals covering all boilers equipment and all other items and accessories as per Section 230501.
 2. As a part of the maintenance and operating instructions, review data in operating and maintenance manual,

including preventative maintenance schedule and procedures, and procedures for obtaining repair parts and technical assistance. Demonstrate all phases of operation including start-up and shutdown.

- E. Schedule training with the City of New York and provide at least 4 days notice to the City of New York and building manager.

3.04 BOILER CLEANING AND WATER TREATMENT

- A. The Contractor shall retain the services of a reputable water treatment service company. This company shall test boiler water biweekly and provide a written report biweekly with recommendations for chemical treatment as soon as the system is filled with water. This same company shall provide water treatment service and inspection every two (2) weeks during temporary heating and for one (1) year after Substantial Completion.
- B. Prior to start-up the Contractor shall flush and clean the water/steam side of the boiler to remove all rust and deposits. Cleaning agents to be used shall be as recommended and approved by the Chemical Treatment Firm and by the Boiler Manufacturer.

3.05 ACCEPTANCE TEST

- A. Boilers/Burners shall not be placed in operation until completion of construction, inspection and testing and a Certificate of Compliance has been issued by the Commissioner. All final inspections and tests of boilers/burners shall be subject to the provisions for Special Inspections except for inspections and tests made by a qualified boiler inspector in the employ of the Building Department or a duly authorized insurance company as provided in section 204 of the labor law.

3.06 INTERDISCIPLINARY TESTS AND FUNCTIONAL PERFORMANCE TESTS

- A. Interdisciplinary Pre-Start-Up and Start-Up Tests:
The Contractor shall conduct interdisciplinary pre-start up and start up tests as per the manufacturer's start up procedures. The Contractor shall submit signed start up affidavit signed by the factory authorized service representative indicating that all of the manufacturer's pre-start up and start up procedures have been successfully completed.

B. Functional Performance Tests:

The Contractor shall also submit signed functional performance testing affidavit signed by the factory authorized service representative indicating that all of the manufacturer's functional performance tests have been successfully completed. Refer to the Drawings and Section 230993 since a BMS/DDC system is to be provided and the equipment is to be integrated into the BMS/DDC system.

3.07 COMMISSIONING OF CAST IRON BOILERS

- A. The Contractor shall comply with the Commissioning Requirements of Contract Specification for Cast Iron Boilers.
- B. For Cast Iron Hot Water Boilers, all testing for hot water piping, gas piping and hydrostatic testing of boilers, shall be completed prior to commencement of the commissioning process.
- C. The following Commissioning Requirements are presented to supplement the full range of responsibilities placed on the Contractor by the Contract Documents. The Contractor is responsible to ensure the sub-contractors and manufacturer's providing services for the Contractor perform their required tasks.

1. Contractor Quality Control

- a. Coordinate initial review and processing of submissions and contract deliverables in accordance with applicable technical specifications and Contractor Quality Control (CQC) Program.
- b. Implement the three-phase QC Inspection System as outlined in the Contractor Quality Control Program.
 - 1) Preparatory Inspections
 - 2) Initial Inspections
 - 3) Follow-Up Inspections
- c. Schedule and coordinate with the Commissioner, the Special Inspections and Periodic Inspections.
- d. The Contractor shall perform necessary Interdisciplinary Tests, Functional Performance Tests, and Acceptance Tests as described in the manufacturers' literature required by the Contract and this specification.

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- e. Coordinate and maintain documentation required for the commissioning process as part of the CQC activities, including the documentation of subcontractors and suppliers.
 - f. Prior to Substantial Completion and as a condition for such, the Contractor shall demonstrate substantial conformance with applicable Interdisciplinary/Functional Performance and Acceptance Tests for all equipment and systems as detailed in the Contract Documents.
2. Subcontractors and Suppliers Quality Control
- a. Prepare and submit appropriate contract submissions for approval.
 - b. Perform all required Interdisciplinary, Functional Performance Tests, and Acceptance Tests required by Contract documents.
 - c. Perform all corrections and adjustments to the work and re-test as required.
3. Manufacturer's Representatives Quality Control
- a. Provide training and training data as required by Contract.
 - b. Coordinate special tests, demonstrations and start-up details as required.
 - c. Provide warranties, guarantees, and certifications as required by Contract.
 - d. Provide technicians who are familiar with the construction and operation of installed systems and who shall be on call for start-up, training and turn-over operations.

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SECTION 235224
FUEL BURNING EQUIPMENT
(FOR HOT WATER BOILERS)

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide equipment required for the installation of a complete system for the burning of natural gas. Product specific requirements are contained herein; Section 230501, Basic HVAC Requirements, shall be referred to for general requirements.
- B. The burner is part of the boiler unit and shall be supplied by the same manufacturer as the boiler.

1.02 RELATED SECTIONS

- A. Division 22 Sections
- B. Division 23 Sections

1.03 SUPPLEMENTAL SUBMITTALS

Burners will be submitted with the boilers.

- A. Shop Drawings
 - 1. Submit a complete set of Shop Drawings for burner, and appurtenances as required and defined in Section 230501.
 - 2. All burners shall bear the UL Listing Mark (A) or shall be ETL listed.

For detailed heat release and Listing requirements, refer to the Engineering Criteria, Fuel Burning Code issued by City of New York - Department of Air Resources 1973, paragraphs 2 and 3.

- B. Wiring Diagrams: Submit manufacturer's electrical requirements for power supply wiring to boilers/burners. Submit manufacturer's wiring diagrams for interlock and control wiring required for final installation of boilers/burners & controls. Clearly differentiate between portions of wiring that are factory-installed and portions to be field-installed.

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- C. Maintenance Data: Submit maintenance data and parts list for each burner, control and accessory; including "trouble-shooting" in the maintenance guide. Include the Combustion System Manager Software for Network Interface Units requiring Personal Computer and Operator Interface Software.
- D. Test Report
1. Submit factory certified test results prior to shipping.
 2. Submit field test and inspection reports prior to placing the burner in operation
- E. Submit all the videotapes produced during the training.
- F. Permits and Approvals
1. New York City Permits and Approvals: Submit a copy of all approved permits from the Department of Buildings, Fire Department, Department of Environmental Protection (Air Resources), Department of Highways, and any other department having jurisdiction.
- G. Piping and Wiring Diagram: Provide "As Built" wiring diagram and piping layout of the gas for the boiler/burner or burner system. The diagram and layout shall be framed and mounted where directed in the Boiler Room. Frame shall be of aluminum satin finish, with one side of frame removable and with a plywood backing. Provide safety glass in the front. All parts of the installation shall be indicated exactly as installed and shall be properly identified. Valve identification numbers shall agree with valve tags of Section 230553: HVAC Identification and all piping shall be clearly shown and labeled.
- H. Certificates:
1. Certificate of Operation: At completion of the burning system installation work, obtain a "Certificate of Operation" from the Department of Environmental Protection (Air Resources) and deliver this certificate to the Commissioner.
 2. Certificates of approvals
 3. Federal and New York State Certifications.
 4. Submit UL-A or ETL listing for the burner.

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5. Certificate of Compliance
 - I. Provide a set of manufacturer's guarantees for each burner and other fuel burning appurtenances.
 - J. Maintenance Materials
 - K. Certificate: Contractor's start-up and demonstration affidavit.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

A. Codes and Standards

1. NFPA Compliance: Install gas-fired burners in accordance with NFPA Code 54-2006: National Fuel Gas Code and related NYC Fuel Gas Code Amendments.
2. Industrial Risk Insurers Compliance: Install gas fired burner's gas train piping in full accordance with Industrial Risk Insurers (IRI) requirements. Control devices and control sequences shall also be in accordance with Industrial Risk Insurers (IRI).
3. All appliances regulated by the New York City Construction Codes shall be listed and labeled (reference MC 301.4, MC 301.6). Testing of material and equipment shall be in accordance with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department (MEA) before the effective date of the NYC Construction Codes may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.
4. Per DEP Bureau of Air Resources, burners shall be listed per UL-A or ETL.

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- B. Fuel burning equipment shall be designed to operate satisfactorily and efficiently without objectionable smoke, odor, or noise.
- C. Special Inspections are required on any installation of fresh air louvers, dampers, fresh air fans, fuel burners, gas piping, boilers, and all other items and accessories, in accordance with the requirements of New York City Building Code.
- D. At the completion of the Work, file all necessary final applications and relevant papers, Drawings, Amendments, and all other items and accessories and secure for the COMMISSIONER, a Certificate of Operation from the NYC Bureau of Air Resources and the NYS Department of Environmental Conservation for the burning system and all the approvals from the Building Department and the Bureau of Electrical Control. Submit with the request for final payment proof of filing for an inspection certificate from the Bureau of Electrical Control and a certificate of satisfaction from the Building Department. Acceptable evidence of filing with the Bureau of Electrical Control will be the job posting card issued by the Bureau.
- E. Contractor is responsible for any and all fees assessed by the NYC Bureau of Air Resources for inspection and/or cancellation if the initial BAR inspection fails to result in the issuance of the Certificate of Operation for the installation.
- F. Certificates of approval issued by the Building Department, Department of Health, Department of Water Resources, Bureau of Electrical Control, Fire Department, Department of Air Resources, Department of Highways, and all other departments having jurisdiction in connection with this Work shall be submitted.
- G. The Contractor shall register, file applications and obtain all related permits, certifications and approvals required by all agencies including but not limited to:
 - 1. Plumbing Inspection - sign off (DOB).
 - 2. Bureau of Electrical Controls. (DOB/BEC).
 - 3. Environmental Protection Agency (Federal).
 - 4. STATIONARY COMBUSTION INSTALLATION - Application/ Permit New York State Department of Environmental Conservation (D.E.C.).
 - 5. APPLICATION FOR CERTIFICATE OF OPERATION OF FUEL BURNING EQUIPMENT, Air Resources (B.A.R.) Tests,

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Inspection and Certificate of Operation - NYC
Department of Environmental Protection (DEP).

6. Coordination, inspection and approval by the
Natural Gas Utility Company.
7. Certificate of Compliance
- H. Before submitting any equipment shop drawings for
approval, Contractor and the Equipment Vendor and
Manufacturer shall coordinate the controls required for
the system.
- I. Per NYC Fuel Gas Code 403.9.3, joints and connections
shall be approved and of a type approved for natural gas
piping systems. All threaded joints and connections
shall be made tight with suitable lubricant or pipe
compound. Pipe joint compounds and thread seal tape that
utilize Teflon (PTFE) shall be approved for usage on
natural gas lines.

1.05 MANUFACTURER WARRANTY

- A. Burner guarantee shall be for two years. All other
guarantees shall be for one year. All guarantee periods
shall start at Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. If burners are provided with the boilers: burners shall
be provided by the same manufacturer as the Boilers.
Refer to the following Sections:

Section 235223: Cast Iron Boilers

Boiler Manufacturer shall select burners that
comply with the specifications and best match
the boilers.

- B. Approved manufacturers are as follows:

1. Gordon Piatt
2. Powerflame
3. S.T. Johnson
4. Or approved equal

2.02 BOILER BURNER

- A. Each burner shall be arranged for single fuel operation
of natural gas. Adjust burner and controls so that the

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combustion efficiency is maintained automatically at the minimum efficiency values indicated in Specification Section 235223.

- B. Burner shall be of the high static forced draft type. All of the combustion air shall be provided by an integral blower of the forward curved type, direct drive 120 volt, 1 phase motor. The blower fan shall be mounted directly on the blower motor shaft and the entire assembly shall be removable as a single unit through the motor side of the burner. The burner shall be steel of the all welded construction and shall have a stainless steel flame retention firing head. The burner shall be equipped with twin combustion air inlet shutter dampers with nylon bearings for smooth and repeatable operation of the dampers.
- C. Burner shall be provided with a gas spark ignition pilot. Pilot piping shall have a factory installed shut off cock, "Y" strainer, low gas pressure switch, gas pressure regulator, plugged leakage test connection and two (2) solenoid pilot safety shut-off valves. Provide a lubricated plug cock in the field piping directly before the pilot piping. Provide a "Y" strainer after the lubricated plug cock. Transformers, relays, switches and other accessories required to make the burner systems operative shall be provided. Refer to Plumbing for venting of pilot piping.
- D. Burner Gas System
 - 1. The gas burning components shall be of the multiport type designed to inject many high velocity jets of gas into the combustion air stream.
 - 2. Gas Train: The burner manufacturer shall provide a factory assembled and pre-wired gas train (manifold). The gas train burner manifold shall be capable of providing sufficient gas to the burner for burner operation at the full firing rate of the boiler with the required gas pressure at the inlet to the gas burner manifold. Gas train shall include the following components: Gas pressure regulator, motorized primary safety shut off valve with proof of closure switch, high and low gas pressure switches, a second motorized safety shut off valve, plus a normally open solenoid operated vent valve located between the two safety shut off valves, pressure gauges at regulator inlet and outlet and burner manifold, strainers, manual gas shut off valves, and plugged test cocks.

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E. Burner Controls

1. Provide all the controls, including the protective and modulating flame control devices required for the safe operation of all the burning equipment. Provide all the electric wiring for the burner controls. Safety devices, including pressure controls, combustion controls, relays, and all other items and accessories, shall have their electric switching mechanism connected to an ungrounded conductor or conductors.
 - a. Controls for burner shall include automatic gas-electric ignition with magnetic gas valve, ignition transformer, electronic flame failure programming control, safety devices, and all other items and accessories. Gas piping, sensing devices, transformers, relays, switches and other accessories required to make the burner system operative, shall be provided.
 - b. Each system shall also be equipped with a flame failure control, low water pressure cut-off, temperature operating control, pressure limit control, smoke alarm shutdown, and all other items and accessories.
2. Solenoid Valves: Each burner shall be provided with 120-volt normally closed, packless solenoid valve in the pilot gas supply. The pilot gas valve shall be wired into the burner programming circuit to open only at the end of the pre-purge period and to remain open until the main flame has been proven. Gas valve shall be UL approved, and, in addition, shall be approved by the American Gas Association. Each solenoid valve shall be manufactured by Automatic Switch Co. (ASCO), Honeywell, ASCO/General Controls Co. The solenoid pilot gas valve shall be designated by the manufacturer for use with natural gas at the pressure available.
3. Temperature Limit Control: Provide on each boiler a temperature limit control, wired in series with all other control devices to the ungrounded conductor, to stop the burner and to interrupt completely the power to the flame failure control if the boiler water temperature exceeds the limit recommended by Manufacturer. Limit controller shall be equipped with a manual reset feature.

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4. Flame Failure Control
 - a. Each burner shall be provided with a flame failure (combustion safety) programming control which will de-energize all electrically operated fuel valves and burner equipment within four seconds, and actuate a visual alarm mounted on the control panel after an operating flame failure has occurred. Automatic start up and shutdown programming shall be a part of this safety equipment.
 - b. Pilot and main flame shall be detected by a lead sulphide infrared or ultraviolet scanner as per burner manufacturer's recommendation. Scanner shall be so located as not to be actuated by hot refractory or other hot body. When ultraviolet flame detection is used, a test is required to verify that ultraviolet radiation from the ignition spark is not being detected.
 - c. Control shall provide for prepurge prior to light off, proof of pilot before main fuel valves open, proof of main flame only during run, and post purge at the end of each firing period. Control shall affect a safety shutdown prior to the opening of the main fuel valves if the presence of the pilot flame has not been proven.
 - 1) Burner pre-purge cycle and post-purge cycle shall operate as follows: The pre-purge cycle shall be 100% purge air flow and shall have a duration equivalent to a minimum of 4 air changes. The post-purge cycle shall be 15 seconds minimum.
 - d. In case of electrical power supply failure, control shall recycle automatically when power is restored. In case of safety shutdown, control shall not permit recycling of the burner equipment until after the manual operation of a reset button.
 - e. The control shall accomplish a safe start component check during each start.
5. Provide a low fire hold minimum temperature aquastat and wire into limit circuit to prevent boiler from switching to high fire until water temperature reaches 140° F or a temperature recommended by boiler Mfr. Aquastat shall be

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similar to Honeywell Model L 4006B or L6006A and shall be installed in tapping in the boiler shell.

6. Night setback: existing buildings - provide a seven day programmable electric clock linked to boiler-burner controls; night and unoccupied times (weekends / holidays) shall be programmed to operate in a setback mode; the clock should have overriding capability. During occupied times, the hot water header temperature controls the burner firing. An outdoor temperature sensor (set at 40° F) together with a thermostat (with temperature set back at 55° F) in the coldest room will determine the burner operation during the unoccupied hours. The header temperature limiting control device shall always be functional.

F. Burner Control Panel:

1. The burner manufacturer shall provide for each boiler/burner, boiler/burner control panel that shall house all required operating controls and electrical components. The burner control panel shall be constructed of not less than 16 gage sheet steel in accordance with NYC Electrical Code and shall be complete with hinged and removable front access door. The panel shall contain the following equipment assembled, connected and wired:
 - a) Burner Motor Circuit Breaker
 - b) Burner Motor Starter
 - c) Forced Draft Fan Motor Circuit Breaker
 - d) Forced Draft Fan Motor
 - e) Control Circuit Transformer
 - f) Control Power ON-OFF Switch
 - g) Manual-Automatic Switch
 - h) Control Potentiometer
 - i) Low Fire Potentiometer
 - j) Flame Safeguard & Programming Control
 - k) Alarm Silence Push Button
 - l) Alarm Bell
 - m) Flue Temperature Gauge
 - n) Smoke Density Monitor

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2. The following lights and/or alarms shall be included as a minimum readable from the exterior of a closed control panel:

	<u>Light</u>	<u>Alarm</u>
Power On	x	
Flame Failure	x	x
Pilot ON	x	
Main Gas Valves ON	x	
Pre purge	x	
Post Purge	x	

3. Local display shall afford the operator the maximum amount of information in an easily understood format. Storage capacity shall include the number of alarm failures for each point as well as the following information

Time Gas Firing

4. Interface Drawings shall be provided by the boiler/burner manufacturer for the entire control system of the boiler/burner and auxiliaries including but not limited to make-up water and code related devices as controlled by the burner control panel. Two drawings shall be provided. One a ladder diagram for sequence of operation and two, a line drawing of the actual wiring of the panel complete with wire numbers and color code.
- G. All smoke alarm controls and stack controls installed in the stacks shall be fitted with glass lens caps, sealing bellows or equal approved method to assure positive stack seal.

2.03 HOT WATER BOILER EQUIPMENT CONTROL POINTS

A. CONTROL SYSTEM "GATEWAY"

The manufacturer of the electronic fuel burner plant controller shall provide a protocol translator gateway for native control systems that are not LonWorks compliant in order to convert to the LonTalk protocol (ANSI approved standard EIA/CEA-709.1-A-1999).

The protocol translator gateway shall enable the electronic fuel burner plant controller network devices to communicate directly with the COMMISSIONER'S LonWorks based Building Management System.

Provide interoperable protocols as specified: Modbus,

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Profibus, or approved equal. Use of a proprietary burner management protocol other than Modbus or Profibus is subject to approval of the Commissioner.

The data transfer between Modbus/Profibus and the LonTalk protocol shall provide the required Standard Network Variable Types (SNVTs) and configuration parameters to monitor the Hot Water Boiler plant from the LonWorks based Building Management System using the LonTalk protocol.

The data transfer between the manufacturer's hot water boiler electronic control panel and the HSA LonWorks based Building Management System is to be accomplished using a Field Server, or approved equal, protocol translator gateway and additional integration hardware specified below. All the required software and configuration files shall be provided and be downloadable via the serial or Ethernet port of the gateway.

Where the use of a unique proprietary protocol is utilized by the burner manufacturer, a custom designed configurable "gateway" shall be provided by the manufacturer of the burner. Use of a unique burner manufacturer proprietary protocol is subject to the approval of the Commissioner.

The burner manufacturer shall retain the services of a Field Server approved Systems Integrator, or approved equal, who shall demonstrate the proper integration of the boiler control system to the satisfaction of the Commissioner and in accordance with the requirements of the Drawings and Specification Sections.

Submit manufacturer's wiring diagrams for interlock and control wiring required for final installation of the burner controls interface. Clearly differentiate between portions of wiring that are factory-installed and portions to be field-installed by the burner control panel manufacturer.

The above addresses electronic burner control systems. For electric air/fuel burner control systems utilizing digital cut-in/cut-out controls only without analog header aquastat, the Contractor shall provide sensors, wells, control devices, current switches/transformers, LonWorks Controllers, etc. as required to comply with the Drawings and the Sequence of Operation indicated in Specification Section 230993.

2.04 FLUE GAS TEMPERATURE INDICATORS

- A. Provide a thermocouple type flue gas temperature indicator for each boiler. Thermocouple shall be located

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on the boiler smoke box, and the indicator shall be flush mounted in the burner control cabinet. Temperature scale shall be graduated in 10° increments, from 0° F. to approximately 1000° F. Excess thermocouple wire shall be coiled and secured within the control cabinet. Installation shall be made in accordance with the manufacturer's written instructions. Flue gas temperature indicators shall be Preferred Instruments Model JC11F or equal.

2.05 FIRE EXTINGUISHER

- A. Provide in location at each burner, one 5 pound capacity BC dry chemical charge fire extinguisher.

PART 3 - EXECUTION

3.01 SUPPLEMENTAL INSTALLATION

A. Electric Work:

1. The Contractor to provide at a minimum, burner, control wiring, power wiring connections from each burner control cabinet to burner and all other items and accessories to make system fully operational. Equipment shall be provided with terminal boxes to receive connecting conduits. The use of wire nuts in lieu of terminal boxes for the splice connections is prohibited. All electric work shall conform to the requirements of the Bureau of Electrical Control, and other authorities having jurisdiction. File an application for electrical inspection with the Bureau of Electrical Control. At the completion of the electrical work, submit with the application for progress payment, the pink copy of the job posting card issued by the Bureau of Electrical Control in connection with each application for certificate of electrical inspection.
2. Contractor to provide power wiring to burner control cabinet and all other items and accessories to make system fully operational. For packaged assemblies, the Contractor to provide terminals on the equipment to receive the service wiring, together with motor starters, contactors, protective and disconnecting devices, and all other items and accessories, as required to make the installations complete. Contractor to provide all wiring between the control cabinets and the burner equipment, burner controls and emergency cut-out switches, low water cut-offs, smoke density

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monitors, forced draft fans, draft sequence equipment and outside air intake damper motors.

3. Conduit: Wiring shall run in conduit in accordance with the NYC Electrical Code, except the wiring in control cabinets, and where flexible connections are necessary. Wiring connections between each control cabinet and the ignition assembly box shall be in either standard conduit with oil impervious gasketed connections or in flexible oil tight conduit (Sealtite). Wiring connections between the ignition assembly box and the burner motor, between all motors and all other items and accessories shall be in flexible oil tight conduit with Scotchlok 2 connectors inside junction box. In other locations, flexible metal conduit (Sealtite) may be used for final connections not exceeding 3' in length. Conduits shall be not less than 3/4", standard weight galvanized steel conduit, large enough to accommodate the wires specified. Flexible oil tight conduit (Sealtite) shall be U.L. approved. No conduit shall be installed contact with the boiler room floor.
4. Conductors:
 - a. Conductors shall be copper of 98% conductivity, and free of splints, flaws, or other defects. They shall be in accordance with the NYC Electric Code, and with Bulletin No. 8, 1963 of the Department of Water Supply, Bureau of Electrical Control. Conductors shall be delivered in their original packages or reels, which shall be marked with the manufacturer's identification and date of manufacture. Conductors manufactured more than one year prior to delivery at the job will not be accepted.
 - b. Wiring between the burner control cabinet and associated equipment installed shall be type THHN, 90° C, 600 volts.
5. Magnetic Motor Starters (for packaged equipment): Starters for control of the motors shall be magnetic type and shall be equipped with proper size thermal overload relays, and enclosed triple-pole (25-ampere contactor) magnetic switch providing overload and voltage failure protection. Where motor starters with disconnect switches are required, the starters may be combination type. Where fuse protection are required, the starters shall be equipped with proper size fuses.

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- B. Per MC 1004.3, clearances shall be maintained around equipment and appliances so as to permit inspection, servicing, repair, replacement and visibility of all gauges. When equipment is installed or replaced, clearance shall be provided to allow access for inspection, maintenance and repair. Passageways around all sides of equipment shall have an unobstructed width as required by the manufacturer and in no case less than 18 inches, unless otherwise approved by the Commissioner.

3.02 FIELD QUALITY CONTROL/INTERDISCIPLINARY TEST AND FUNCTIONAL PERFORMANCE TESTS

A. Performance Tests

1. Performance tests are required upon the completion of the burner installations. Performance tests shall be conducted in compliance with Part II of the Engineering Criteria Fuel Oil Burning Equipment. Test holes 5/16" in diameter shall be drilled in numbers and locations approved by the Bureau of Air Resources. Insulation (if any) around the test hole location shall be removed from an area 4" by 4", dust removed and exposed insulation walls painted. The Contractor shall submit signed functional performance testing affidavit signed by the factory authorized service representative indicating that all of the manufacturer's functional performance tests have been successfully completed and that the equipment is operating as designed.
2. Prior to the date of the scheduled performance test to be conducted by the Bureau of Air Resources' personnel, and on a date convenient to the Commissioner, Contractor shall demonstrate that:
 - a. The burner is limited by a means approved by the Bureau of Air Resources to a burning rate approved in the Work Permit.
 - b. With breeching damper in open position, the pressure drop across the damper does not exceed 0.05" water column at high fire.
 - c. That the burner flame, at maximum or "high" fire does not impinge on any refractory or boiler surfaces.
 - d. The "turndown" ratio of the burner shall not be less than specified.

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3. The Contractor shall test the LonWorks DDC interface gateway system and demonstrate compliance with requirements of the Specifications to the satisfaction of the Commissioner. Replace all damaged and malfunctioning controls and equipment. The Contractor shall submit written affidavit indicating that the equipment is operating as designed.
 4. Provide manpower, scaffolds, instruments, burner operators and invite the Commissioner, as required to perform a test of the operation of all the installed equipment including a pre-performance test similar to that described in the Bureau of Air Resources Criteria. This test shall precede the actual performance test conducted by Bureau of Air Resources personnel on their inspection date, by no more than 10 working days. The Contractor shall have a licensed oil burner operator present at this pre-performance test and at the final one.
 5. After the aforementioned adjustments are made and all violations corrected, Contractor shall, on the date designated by the Bureau of Air Resources, return with all necessary manpower, scaffolds, and any other items and accessories, all as above listed and as needed to assist at the performance test required by the Bureau of Air Resources
- B. Supervisory Personnel: Provide field service personnel in the employ of the Fuel Burning Equipment and Control System Manufacturer for such time as required to put installed equipment into operation. Supervisory services shall include the following:
1. Inspect fuel burner and control installations prior to start-up.
 2. Supervise initial firing of burners.
 3. Boiler/Burner testing.
 4. Training of Personnel.
 5. Service.
- C. Boiler Pré-Start Up and Start-Up Interdisciplinary Tests:
1. Upon completion of boiler/burner and controls installations, all manufacturers representative shall visit the site; inspect the installations and notify the Commissioner of any Work which must be done or modified prior to firing boilers.

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2. Upon completion of required Work, or modifications to installed Work and all pressure testing, the manufacturer's representative and Commissioner shall supervise the boiler/burner start-up.
 3. Fire the boilers and conduct a preliminary test, for the purpose of checking general operation of the boilers, proving mechanical and electrical controls and making necessary adjustments. All tests shall be made in the presence of the Commissioner. The Contractor shall submit a signed start-up affidavit signed by the factory authorized service representative indicating that all of the manufacturer's pre-start up and start up interdisciplinary test procedures have been successfully completed.
 4. Provide pre-start up check list, start-up list and operating instructions for each boiler, framed under rigid plastic and place where directed in the Boiler Room.
- D. Boiler Tests: Manufacturer's representatives shall be present for all specified boiler tests.
- E. Training of Personnel: Approved Fuel Burner and Control System manufacturer's representatives shall instruct duly authorized personnel in the operation and maintenance of the fuel burners and control systems. Provide a period of 5 days (8 hours per day), not to include travel time for on-site instruction of personnel. This time shall be exclusive of all pre-start-up, start-up and service call time. Provide supervisors capable of instruction, in all phases of fuel burner and control construction, operation and accessories.
- G. Service: Provide the services of a competent field service representative to furnish fuel burner/boiler service to the facility. Service must be available within 48 hours from the time of notification.

3.03 ACCEPTANCE TEST

- A. Boilers/Burners shall not be placed in operation until completion of construction, inspection and testing and an equipment use permit has been issued by the Commissioner. All final inspections and tests of boilers/burners shall be subject to the provisions for controlled inspections.

END OF SECTION

SECTION 236313

AIR-COOLED CONDENSING UNITS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes refrigerant condenser package, charge of refrigerant and oil, controls and control connections, refrigerant piping and connections, motor starters, electrical power connections.
- B. Division 23 Sections

1.2 REFERENCES

- A. Air-Conditioning and Refrigeration Institute:
 - 1. ARI 210/240 - Unitary Air-Conditioning and Air-Source Heat Pump Equipment.
 - 2. ARI 365 - Commercial and Industrial Unitary Air-Conditioning Condensing Units.
 - 3. ARI 460 - Remote Mechanical-Draft Air-Cooled Refrigerant Condensers.
- B. American Society of Heating, Refrigerating and Air-Conditioning Engineers:
 - 1. ASHRAE 15 - Safety Code for Mechanical Refrigeration.
 - 2. ASHRAE 20 - Method of Testing for Rating Remote Mechanical-Draft Air-Cooled Refrigerant Condensers.
 - 3. ASHRAE 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings.
- C. National Electrical Manufacturers Association:
 - 1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
- D. Underwriters Laboratories Inc.:
 - 1. UL 207 - Refrigerant-Containing Components and Accessories, Nonelectrical.

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1.3 SUBMITTALS

- A. Shop Drawings: Indicate components, assembly, dimensions, weights and loading, required clearances, and location and size of field connections. Include schematic layouts showing condenser, refrigeration compressors, cooling coils, refrigerant piping and accessories required for complete system.
- B. Product Data: Submit rated capacities, weights, accessories, electrical requirements, and wiring diagrams.
- C. Manufacturer's Certificate: Certify products meet or exceed specified requirements.
- D. Manufacturer's Field Reports: Submit start-up report for each unit.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit start-up instructions, maintenance instructions, parts lists, controls, and accessories.

1.5 QUALITY ASSURANCE

- A. Construction and Ratings: In accordance with ARI 210/240, UL 207. Testing in accordance with ASHRAE 20.
- B. Performance Ratings: Energy Efficiency Ratio (EER) not less than prescribed by ASHRAE 90.1 when tested in accordance with ARI 210/240 .
- C. Perform Work in accordance with State of New York standard.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years documented experience.

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1.7 DELIVERY, STORAGE, AND HANDLING

- A. Comply with manufacturer's installation instruction for rigging, unloading and transporting units.
- B. Protect units on site from physical damage.

1.8 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.9 MAINTENANCE SERVICE

- A. Include systematic examination, adjustment, and lubrication of unit, including fan belt replacement, and controls checkout and adjustments. Repair or replace parts in accordance with manufacturer's operating and maintenance data. Use parts produced by manufacturer of original equipment.
- B. Perform work without removing units from service during building normal occupied hours.
- C. Maintain locally, near Place of the Work, adequate stock of parts for replacement or emergency purposes. Have personnel available to ensure fulfillment of this maintenance service, without unreasonable loss of time.

1.10 EXTRA MATERIALS

- A. Furnish two sets of fan belts.

1.11 MANUFACTURER WARRANTY

- A. Provide one-year warrantee for equipment, materials, and labor. Manufacturer's warrantee shall be provided for equipment including 5-year warrantee for the refrigeration compressors. Other components within the units shall have two (2) year warranty. Warranty period starts at the Substantial Completion of the work.

PART 2 PRODUCTS

2.1 CONDENSING UNITS

- A. Manufacturers:
 - 1. The Trane Co.

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2. Carrier
3. McQuay
4. Or approved equal

B. Product Description:

1. Packaged, factory assembled, pre-wired unit, suitable for outdoor use consisting of casing, condensing coil and fans, integral sub-cooling coil, liquid accumulator screens, and controls.

2.2 HOUSING

- A. House components in welded steel frame with galvanized steel panels with weather resistant, baked enamel finish.
- B. Mount starters, disconnects, and controls in weatherproof panel with full opening access doors. Furnish mechanical interlock to disconnect power when door is opened.
- C. Furnish removable access doors or panels with quick fasteners.
- D. Furnish welded steel floor mounting stand and duct collars at coil inlet and fan outlet.

2.3 CONDENSER COILS

- A. Coils: Aluminum fins mechanically bonded to seamless copper tubing. Furnish sub-cooling circuits as applicable. Air test under water to 425 psig (2900kPa), and [vacuum] dehydrate. Seal refrigerant.
- B. Coil Guard: Louvered with lint screens.
- C. Configuration: Single refrigeration circuit or dual Two refrigeration circuits for larger capacities.

2.4 FANS AND MOTORS

- A. Vertical discharge belt driven propeller type condenser fans with fan guard on discharge , equipped with roller or ball bearings with grease fittings extended to outside of casing.
- B. Weatherproof motors suitable for outdoor use, single phase permanent split capacitor or 3 phase, with

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permanent lubricated ball bearings and built-in current and thermal overload protection.

2.5 CONTROLS

- A. Factory wired and mounted control panel, NEMA 250 Type 4 enclosure, containing fan motor starters, fan cycling thermostats, head pressure controls, compressor interlock and control transformer.
- B. Furnish thermostat to cycle fan motors in response to outdoor temperature.
- C. Furnish head pressure switch to cycle fan motors in response to refrigerant condensing pressure.
- D. Furnish solid state control to vary speed of one condenser fan motor in response to refrigerant condensing pressure.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install in accordance with ASHRAE 15.
- B. Install refrigerant piping from unit to condensing unit. Install refrigerant specialties Install connection to electrical power wiring in accordance with Section 26 05 22.

3.2 MANUFACTURER'S FIELD SERVICES

- A. Furnish cooling season start-up and winter season shutdown service, for first year of operation. If initial start-up and testing takes place in winter and machines are to remain inoperative. Repeat start-up and testing operation at beginning of first cooling season.

3.3 DEMONSTRATION AND TRAINING

- A. Demonstrate starting, maintenance, and operation of unit.

END OF SECTION

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SECTION 237313
AIR HANDLING UNITS

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Division 23

1.02 SUBMITTALS

- A. Product Data:
1. Catalog sheets, brochures, performance charts, standard schematic drawings, specifications and installation instructions for each air handling unit.
- B. Quality Control Submittals:
1. Copy of Seismic Qualifications Certificate.
- C. Contract Closeout Submittals:
1. Operation and Maintenance Data: Deliver 2 copies, covering the installed products, to the Commissioner.

1.03 QUALITY ASSURANCE

- A. Source Quality Control: Factory test units in accordance with ARI Standard 430 - Central-Station Air-Handling Units.
- B. Detailed description of equipment anchorage devices on which the certification is based including installation requirements.

1.04 WARRANTY

- A. Provide manufacturer's guarantee for a two year period. The guarantee period shall start at Substantial Completion.

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PART 2 PRODUCTS

2.01 AIR HANDLING UNITS

- A. General Design: Sectional constructed unit which is structurally self supporting, gasketing between adjoining sections, sections consisting of:
1. Fan section.
 2. Coil section(s).
 3. Mixing box and filter section.
 4. Base Rail.
 5. Accessory sections as indicated on drawings.
- B. Casing:
1. Gage:
 - a. Double Wall Exterior: Minimum No. 18 USS sheet steel.
 - b. Double Wall Interior:
 - 1) Solid: Minimum No. 22 USS sheet steel.
 - 2) Perforated: Minimum No. 18 USS sheet steel.
 - a) Perforation located in fan section for acoustics.
 2. Accessibility:
 - a. Removable panels and insulated double wall inspection doors to all internal parts.
 - b. Inspection Doors:
 - 1) Exterior: Minimum No. 18 USS sheet steel.
 - 2) Interior: Minimum No. 20 USS sheet steel.
 - 3) Minimum 1 inch thick unexposed insulation.
 - 4) Continuously gasketed perimeter.
 - 5) Stainless or chrome plated steel hinges.
 - 6) Two latching handles.
 - c. Sections shall maintain structural integrity upon removal of panels.
 3. Unit Insulation:
 - a. Double Wall: Minimum 2 inch thick insulation material.
 - b. Insulation minimum 1-1/2 pound density.
 - c. No insulation edges exposed.
 - d. Materials: Comply with requirements of NFPA Bulletin 90A.
- C. Fan Section:

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1. Fan: Double width, double inlet, multi-blade centrifugal type, designed for low operating speeds.
 2. Fan Shaft: Factory coated with corrosion preventive compound.
 3. Shaft Bearings: Grease packed ball or sleeve type, sealed in self-aligning pillow blocks.
 4. Motor: Mounted internally or externally.
 - a. Adjustable motor base.
 - b. Adjustable sheave V-belt drive.
 - c. Belt Guard (For external only).
 - d. See Section 262419 - MOTOR AND MOTOR CONTROLLERS.
 5. Vibration Isolation:
 - a. Internally Mounted Motor: Spring isolators by manufacturer.
 - b. Externally Mounted Motor: See Section 230549 - VIBRATION ISOLATION.
 - c. Flexible connection between fan and casing.
- D. Coil Section:
1. Seamless copper or red brass tubing, leak tested at minimum 200 psig air pressure under water.
 2. Aluminum flat plate fins with formed collar permanently bonded to tubing by means of mechanical expansion.
 3. Coil header(s) of cast iron, copper or steel.
 4. Built in pitch between headers, or pitch coils to permit drainage. Extend drainage connections to exterior of unit casing.
 5. Gasketing or safining to prevent air by-pass or infiltration between coil channels, finned surfaces, and casing.
 6. Easy top of side removal of coil(s) without disassembly of adjacent coil(s) or coil section.
- E. Condensate Drain Pan:
1. Insulated double wall galvanized steel construction.
 2. Sloped to drain connection.
 3. Inspection door to allow for cleaning.
 4. Separate drain pans for each tier of cooling coils.
- F. Filter Section:
1. Easy filter removal and replacement.
 2. Flat, V or Z pattern arrangement.
 3. Filter Type:

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- a. 2 inch pleated.

- G. Mixing Box:
 - 1. Mixing box or combination filter and mixing box.
 - 2. Damper opposed or parallel multi-airfoil blades for:
 - a. Control of outdoor and recirculated air.
 - b. Prevention of air stratification.
 - 3. Maximum damper leakage rate 20 cfm/sq ft @ 4.0 in wg.
 - 4. Damper bearings or bushings; stainless or nylon.
 - 5. Jamb and blade edge seals.

- H. Factory Finish:
 - 1. All Exposed Surfaces: Factory applied baked enamel, or galvanized finish in accordance with ASTM A 653, coating designation G90.

- I. Base Rail: Factory installed by manufacturer.
 - 1. Minimum 6 inch height (to elevate condensate drain).
 - 2. Galvanized steel.
 - 3. Structurally capable of supporting unit on floor or by ceiling suspension.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install the Work of this Section in accordance with the manufacturer's printed instructions.

END OF SECTION

SECTION 238106
COMMERCIAL PACKAGED ROOFTOP HEATING AND COOLING UNITS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide packaged commercial type rooftop heating and cooling units as specified herein, as shown on the Drawings and as needed for a complete and proper installation. Product specific requirements are contained herein; Section 230501, Basic HVAC Requirements, shall be referred to for general requirements.

1.02 RELATED SECTIONS

- A. Division 23 Sections
B. Division 26 Sections

1.03 SUPPLEMENTAL SUBMITTALS

- A. Include with the shop drawings mounting details for securing and flashing roof curb and/or duct penetrations to roof structure. Indicate coordination requirements with roof membrane system.
- B. Wiring Diagrams: Submit manufacturer's electrical requirements for power supply wiring to packaged heating and cooling units by the Contractor. Submit manufacturer's wiring diagrams for interlock and control wiring required for final installation of packaged heating and cooling units and controls. Clearly differentiate between portions of wiring that are factory-installed and portions to be field-installed by the Contractor.
- C. Provide control devices. All digital controls shall be able to function in a stand alone mode without any network connections.
- D. Piping Diagrams: Submit manufacturer's gas piping requirements for fuel supply piping for packaged rooftop units. Submit manufacturer's diagrams for final installation of package rooftop units. Clearly indicate field tie in points and capacity requirements.
- E. Coordination Drawings: Rooftop units to roof-curb mounting details drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved: size and location of rooftop unit mounting rails and anchor points and methods for anchoring units to roof curb or dunnage; required roof penetrations for ducts, pipes, and electrical raceways, including size and location of each penetration.

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- F. Manufacturers' test results.
- G. Operation and Maintenance Data to include in emergency, operation, and maintenance manuals; and the maintenance data specified in Section 230501.
- H. Video recordings produced during the training.
- I. Contractor's start-up and demonstration affidavit.

1.04 SUPPLEMENTAL QUALITY ASSURANCE

A. Codes and Standards

1. ARI Compliance: Provide capacity ratings for packaged heating and cooling units in accordance with ARI Standard 360: Standard for Commercial and Industrial Unitary Air-Conditioning Equipment.
2. Refrigeration system shall be constructed in accordance with ASHRAE 15-2001: Safety Standard for Refrigeration Systems as modified by NYC Mechanical Code Chapter 11.
3. Refrigeration equipment shall be listed and labeled to UL 1995-1998. UL listing shall be indicated on the Shop Drawings.
4. Packaged rooftop units shall comply with the EER requirements of the 2007 edition of the New York State Energy Conservation Construction Code, ARI 340/360, and ASHRAE 90.1-2004.
5. All appliances regulated by the New York City Construction Codes shall be listed and labeled (reference MC 301.4, MC 301.6). Testing of material and equipment shall be in accordance with 28-113 of the Administrative Code (reference MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner (Office of Technical Certification and Research OTCR) and such material shall be used only to the extent set forth in such approval. Materials that were previously approved by the Board of Standards and Appeal (BSA) or by the Department (MEA) before the effective date of the NYC Construction Codes may continue to be used, but only to the extent set forth in such approval, and only if such approval is not specifically amended or repealed by the Commissioner.

- B. Before submitting any equipment shop drawings for approval, the Contractor and the Equipment Vendor and Manufacturer

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shall coordinate the controls required for the system.

1.05 COORDINATION

- A. Coordinate size, location, and installation of rooftop unit curbs and dunnage supports with roof installer.

1.06 MANUFACTURER WARRANTY

- A. Provide written warranty signed by manufacturer, agreeing to replace/repair motors/compressors that have inadequate and defective materials and workmanship including leakage, breakage, improper assembly, or failure to perform as required, within the warranty period. All warranties shall start at the Date of Substantial Completion. Five-(5) year warranty shall be provided for the refrigeration compressors. Other components within the rooftop units shall have a two-(2) year warranty.

1.07 ATTIC STOCK

- A. Provide with each unit, one spare set of air filters. Suitable box and label spare as to their usage. Provide also spare belts for belt-driver equipment.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Provide rooftop air conditioners with gas fired heating, air-cooled, direct expansion refrigeration for cooling. Units shall be weatherproof and designed for outside mounting on a roof. Units shall supply the conditioned air and return the required air as shown on the Drawings. Condenser fan/coil section shall be designed with vertical or horizontal discharge as shown on drawings.

2.02 COMMERCIAL ROOFTOP UNITS

- A. Roof top unit gas fired heating and electric cooling: Factory assembled, piped, internally wired, fully charged and factory tested; designed for exterior installation; consisting of compressor, indoor and outside refrigerant coils, R-407C or R-410A refrigerant charge, supply fan, return or relief fan (when required), outside coil fan, gas burner, electronic refrigeration, operating controls, filters, and dampers. The equipment manufacturer shall provide auxiliary heating/cooling for the control panel enclosure and/or vestibule if required to guarantee that the required controller operating environmental conditions are provided during all occupied and unoccupied cycles when the equipment cycles intermittently to meet the setback/setup conditions.

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- B. Casing: Galvanized-steel construction with enamel paint finish, removable panels or access doors with neoprene gaskets for inspection and access to internal parts, ½" minimum thermal insulation thickness, knockouts for electrical and piping connections, exterior condensate drain connection, and lifting lugs. All gas piping and electric power shall enter the unit cabinet at a single location.
For units greater than 20 tons, provide double-wall galvanized sheet metal construction with minimum 1-inch thick thermal insulation, with perforated-metal liner.
- C. Supply and Return/Relief Fans: Forward curved, centrifugal, belt driven with adjustable motor sheaves, grease-lubricated ball bearings and motor.
- D. Outside Coil Fan: Propeller type, directly driven by permanently lubricated motor.
- E. Refrigerant Coils: Aluminum-plate fin and seamless copper tube in steel casing with equalizing-type vertical distributor. Provide corrosion-protection coating to both coils.
- F. Compressor: Hermetic reciprocating or scroll compressor (15 HP max) with integral vibration isolators, internal overcurrent, overtemperature protection, internal pressure relief and crankcase heater. Provide label in compressor section indicating rated horsepower and kilowatt equivalent for each compressor.
- G. Refrigerant System: Compressor(s); Outside coil and fan; Inside coil and fan; Expansion valves with replaceable thermostatic elements; Refrigerant dryers; High-pressure switches; Low-pressure switches; Thermostats or sensors for coil freeze-up protection during low-ambient temperature operation or loss of air; Brass service valves installed in discharge and liquid lines; Hot-gas bypass; factory-installed capacity modulating valves; Timed off control: automatic-reset control shuts compressor off after five minutes.
- H. Filters: The filter section shall include UL Class 2, 2" thick, with pleated type filter, with a minimum efficiency of MERV 7. Filters shall be selected for a velocity not to exceed 500 fpm. Filters shall comply with UL 900-1994.
- I. Heat Exchanger: Aluminized-steel construction for natural gas-fired burners with the following controls: redundant dual gas valve with manual shutoff, direct-spark pilot ignition, electronic flame sensor, induced-draft blower and flame rollout switch. All burner operating and safety controls shall be provided by the rooftop unit manufacturer. Provide gas train in accordance with the guidelines of GE Global Asset Protection Services (formerly

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IRI). Provide internal gas pressure regulators equipped with vent piping leading to the exterior of the rooftop unit enclosure unless constructed or equipped with a vent limiting means to limit the escape of gas from the vent opening in the event of diaphragm rupture. Provide manual reset high and low gas pressure switches with vent piping leading to the exterior of the rooftop unit enclosure unless constructed or equipped with a vent limiting means to limit the escape of gas from the vent opening in the event of diaphragm rupture. All vent piping shall be 1" minimum diameter, standard weight schedule 40 black steel pipe. All vent piping shall be caulked where it penetrates the unit exterior skin. All gas vents shall be equipped with a utility approved weatherproof cap that has an insect resistant screen. All vents shall terminate at least 10' away from any chimney and shall terminate at least 10' laterally from any building opening, window, door or ventilation air intake.

Gas vents from high and low gas pressure switches may be manifolded with the vents for the gas pressure regulator. Manifolded atmospheric vent lines shall be connected to a common vent line having a cross sectional area not less than the area of the largest vent plus 50 percent of the combined area of all the additional vents with allowance for length of run and fittings.

The unit manufacturer factory engineer shall supervise final adjustments. The unit manufacturer shall also provide technical support from the burner manufacturer at startup of the unit for supervision.

Per NYC Fuel Gas Code 403.9.3, gas piping joints and connections shall be approved and of a type approved for natural gas piping systems. All threaded joints and connections shall be made tight with suitable lubricant or pipe compound. Pipe joint compounds and thread seal tape that utilize Teflon (PTFE) shall be approved for usage on natural gas lines.

- J. Economizer: Return and outside-air dampers with neoprene seals, outside-air filter, and hood.
1. Damper Motor: Fully modulating spring return with adjustable minimum position.
 2. Control: Electronic-control system uses outside-air temperature to determine economizer cycle.
 3. Relief Damper (where applicable): Power actuated with bird screen and hood.

Outside air, return air, and exhaust air (where applicable) dampers shall have factory mounted fast acting spring return Belimo or approved equal, damper actuators. Outside

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air intake dampers and spill exhaust dampers shall be normally closed. Return air damper shall be normally open. Outside air intake dampers and spill exhaust dampers shall close when the fans stop.

- K. Power Connection: Provide for single connection of power to unit with unit-mounted disconnect switch accessible from outside unit and control-circuit transformer with built-in circuit breaker. All unit power wiring shall enter the unit cabinet at a single location.
- L. The unit control system shall include all required temperature and pressure sensors, input/output boards, transformers, main microprocessor and operator interface and shall perform all unit control function and safeties. Field controls (space thermostats or sensors, outside temperature thermostats or sensors, etc.) shall be furnished and installed by Contractor.
- M. Accessories:
1. Cold-Weather Kit: Electric heater maintains temperature in gas burner compartment.
 2. Condensate drain trap.
 3. Hail guards of steel, painted to match casing
 4. Vertical vent extension
- N. Roof Curb: Steel with corrosion-protection coating, gasketing, and factory-installed wood nailer; complying with NRCA standards; height as required by the manufacturer. Curbs shall be compliant with those defined in Section 230549.
- O. Approved Manufacturers
- Carrier Corp.
McQuay International
Trane
YORK International Corporation.
- P. Fire Alarm Interface Requirements: The packaged rooftop unit shall have manual reset ionization type smoke detectors factory mounted and wired in the supply and return openings to the unit as required by the NYC Construction Codes and NYC Electrical Code. Upon detection of smoke, a signal shall be sent to the building fire alarm system and the fans shall stop. Interlock shall be coordinated by the Contractor.

The packaged rooftop unit shall have terminal strips and interlocking relays factory mounted and wired to interlock with other components of the building. It is the

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responsibility of the contractor to advise the manufacturer of requirements for additional interlocks not covered in this specification.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install packaged heating and cooling units in accordance with manufacturer's installation instructions. Install units plumb and level, firmly anchored in locations indicated, and maintain manufacturer's recommended clearances.
1. The roof curb shall be designed to mate with the unit and provide support and a watertight installation when installed properly. The roof curb design shall allow field-fabricated rectangular supply/return ductwork to be connected directly to the curb. Curb design shall comply with NRCA requirements. Curb shall be shipped knocked down for field assembly and shall include wood nailer strips.
- B. Electrical Wiring: The Contractor shall install electrical devices furnished by manufacturer but not specified to be factory-mounted. Furnish copy of manufacturer's wiring diagram submittal to Electrical.
1. Verify that electrical wiring installation is in accordance with manufacturer's submittal and installation requirements of Division-26 Sections. Do not proceed with equipment start-up until wiring installation is acceptable.
- C. Ductwork: Refer to Section 233113: Metal Ductwork. Connect supply and return ducts to unit with flexible duct connections. Provide transitions to exactly match unit duct connection size.
- D. Gas Piping: Connect gas supply piping to unit as indicated on the drawings with unions and shutoff valves.
- E. Drain Piping: Connect primary unit drain to nearest indirect waste connection. Provide trap at primary drain pan.
- F. For curb mounted units, per MC 307.2.3, the Contractor shall provide a auxiliary drain pan and associated drain line for each DX evaporator coil (when the unit is curb mounted, not dunnage mounted) to avoid damage to any building component as a result of overflow from the primary equipment drain pan or stoppage in the primary condensate drain piping.

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3.02 SIGNS, NAMEPLATES AND OPERATION AND EMERGENCY SHUTDOWN INSTRUCTIONS

- A. Signs, nameplates, and operation and emergency shutdown instructions for refrigeration systems shall comply with the following (per MC 1101.11):
 - 1. Sections 9.15, 11.2.1, 11.2.2 and 11.7 of ASHRAE 15-01 as identified below.
 - 2. Each refrigeration unit or system shall be provided with a nameplate indicating the "rated" horsepower of the prime mover or compressor and the equivalent of such horsepower in kilowatts.
- B. Per ASHRAE 15-01 Section 9.15: Nameplate: Each unit system and each separate condensing unit, compressor, or compressor unit sold for field assembly in a refrigerating system shall carry a nameplate marked with the manufacturer's name, nationally registered trademark or trade name, identification number, the design pressures, and the refrigerant for which it is designed by the refrigerant number (R number as shown in Table 1 of ASHRAE 15-01). If the refrigerant is not listed in Table 1 of ASHRAE 15-01, the refrigerant shall be designated in accordance with ANSI/ASHRAE 34.

3.03 FIELD QUALITY CONTROL

- A. Start-up packaged heating and cooling units, in accordance with manufacturer's start-up instructions and in the presence of a manufacturer's representative. Test controls and demonstrate compliance with requirements. Replace damaged or malfunctioning controls and equipment. Contractor shall submit written affidavit indicating that the equipment is operating as designed. The Contractor shall test the control system and demonstrate compliance with the requirements of the Specifications to the satisfaction of the Commissioner. The Contractor shall perform necessary Interdisciplinary Tests and Functional Performance Tests according to the manufacturer's procedures.

3.04 DEMONSTRATION

- A. Provide services of manufacturer's technical representative for two days to instruct the City of New York and building manager in the operation and maintenance of the packaged heating and cooling units.
- B. Schedule training with the City of New York. Provide at least 2-days notice of training date to the Commissioner and building manager.

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- C. All training shall be video recorded. Submit videos to the Commissioner within 48 hours of the completion of training. Obtain receipt that the videos have been delivered and furnish receipt to the City of New York.

3.05 INTERDISCIPLINARY TESTS AND FUNCTIONAL PERFORMANCE TESTS

A. Interdisciplinary Pre-Start-Up and Start-Up Tests:

The Contractor shall conduct interdisciplinary pre-start up and start up tests as per the manufacturer's start up procedures. Contractor shall submit signed start up affidavit signed by the factory authorized service representative indicating that all of the manufacturer's pre-start up and start up procedures have been successfully completed.

B. Functional Performance Tests:

Contractor shall also submit signed functional performance testing affidavit signed by the factory authorized service representative indicating that all of the manufacturer's functional performance tests have been successfully completed.

END OF SECTION

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SECTION 260501
GENERAL PROVISIONS FOR ELECTRICAL WORK

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Provide labor, materials, tools, machinery, equipment, and services necessary to complete the Electrical Work under this Contract. All systems and equipment shall be complete in every aspect and all items of material, equipment and labor shall be provided for a fully operational system and ready for use. Coordinate the work with the work of the other trades in order to resolve all conflicts without impeding the job progress.
- B. When an item of equipment is indicated on a floor plan and not shown on associated riser diagram or vice-versa, the Contractor shall provide said item and all required conduit and wiring connections for a complete system as part of the Contract.

1.02 EXAMINATION OF SITE

- A. The Contractor shall be held to have examined the site and to have compared it with the Drawings and Specifications, and deemed to have been satisfied as to the conditions existing at the site, as relating to the actual conditions of the site at the time estimating the Work, the storage and handling of materials, and all other matters as may be incidental to the Work under the Contract, before bidding, and no allowance will subsequently be made to the Contractor by reason of any error due to the Contractor's neglect to comply with the requirements of this clause.

1.03 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract.

1.04 ELECTRICAL EQUIPMENT

- A. All electrical equipment shall be the latest of the current year in design, material and workmanship, and shall be the type or model called for in these Specifications.
- B. If the type or model specified has been superseded by a later type or model, the latest shall be submitted for approval and shall be provided as part of the Contract.

1.05 SUBMITTALS

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Provide as outlined in each individual section of these Specifications, including but not limited to:

- A. Product Data: Submit manufacturer's product data for equipment including capacity, performance charts, test data, materials, dimensions, weights, and installation instructions.
- B. Shop Drawings: Submit manufacture's shop drawings indicating dimensions, weight loading, required clearances, location, and method of assembly of components.

Submittals are mandatory as noted in the respective specifications. Schedules, installation instructions, startup manuals, operation and maintenance manuals, and shop drawings are always required to be submitted.

- C. Samples
- D. Special Warranty
- E. Quality Assurance submittals
- F. Operation and Maintenance Manuals
- G. Test results and certificates
- H. Manuals and video tape of the personnel training.

1.06 COORDINATION DRAWINGS

- A. Provide coordination drawings. Coordination drawings shall be completed so as not to delay the progress of the Project.

1.07 BUREAU OF ELECTRICAL CONTROL

- A. Drawings and Specifications:
 - 1. The Contract Drawings and Specifications shall be submitted by the Contractor to the Bureau of Electrical Control to facilitate any inspections that may be made by that agency.
 - 2. It is the intent of these Specifications that all electric work shall be done in strict accordance with the rules of the New York City Electrical Code 2007. Where the requirement of the Drawings or Specifications exceeds the requirements of the Electrical Code, the requirements of the Drawings and Specifications shall be binding upon the Contractor.

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3. Should the Bureau of Electrical Control inspect the work and issue a violation, the Contractor shall correct the Work and eliminate the violation as part of the Contract.

B. Interpretation

1. The electric work detailed in these Specifications and shown on Drawings shall be under the jurisdiction of the Commissioner, subject to the approval of the Bureau of Electric Control.
2. The Commissioner shall be the sole source for interpretation of the Contract Documents. Any discrepancies or conflicts shall be brought to the attention of the Commissioner for clarification.

- C. Materials and Appliance:** All materials and appliance shall be approved by the Commissioner and installed in accordance with the rules and regulations of the Building Department, Bureau of Electrical Control; certificates of approval including the temporary light and power wiring, shall be obtained by the Contractor and delivered to the Commissioner before the Work is finally accepted.

1.08 WORK IN EXISTING BUILDINGS

- A. The Contractor is referred to General Conditions for General Requirements of Work in Existing Structures which shall apply to the Work of the Contract.
- B. Existing material, fixtures, and equipment which have been removed shall not be used again unless specifically required by the Drawings or Specifications.
- C. Removals, Replacements, Adjustments
 1. The Contractor shall remove, relocate, replace, adjust or adapt, all existing conduit, wiring and other electric equipment or apparatus, as required, to provide a complete installation.
 2. The Work shall include, providing all materials, all necessary extensions, connections, cuttings, repairing, adapting and other Work incidental thereto, together with such temporary connections as may be required to maintain service pending the completion of the permanent Work. All Work shall be left in good working order and in a condition equal to the adjacent new or existing Work.

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D. Care in Removing Existing Conductors

1. The Contractor shall use due care and diligence in removing existing conductors from existing conduits in order to prevent conductors from breaking and becoming an irretrievable obstruction within the conduits.

E. Cutting and Repairing

1. Whenever the cutting, or drilling, or removal of any part of the structure (ceilings, walls, floors, shelving, bookcases, partitions, etc.), is required in order to remove, relocate, alter or install any article of electrical equipment (including conduits, boxes, fittings, etc.), the Contractor shall perform all cutting, drilling, etc., and remove the section of structure required. After removal and installation of the electric equipment, the Contractor shall repair the section of structure, as directed by the Commissioner, with new materials, equal to that of adjacent structure of the same type.

Note that in general, all holes through existing structures for conduit installation shall be core drilled, unless prior written approval is provided by the Commissioner.

2. Whenever holes are cut in fire-rated walls or floor slabs in order to permit the installation of conduit or electrical equipment, these holes shall be repaired with material that will restore the fire rating of the wall or floor slab to its original condition.
 3. The Contractor shall paint all repaired areas of the building. The paint shall match the paint of adjacent surface areas, or extend to the nearest architectural break-line, as directed.
 4. Wherever any part of the structure is marred or damaged, the Contractor shall repair the damaged or marred areas of the structure.
 5. Where a piece of electrical equipment is removed, the Contractor shall finish that part of the surface to match surroundings.
- F. Damaged Apparatus: Should any damage, due to the execution of this Contract, occur to the furniture, fixtures, or any equipment or apparatus, such damage shall be properly repaired and/or replaced by the Contractor without charge.

G. Non-Interruption of Services

1. It is imperative that all existing services (electric, light, power, fire alarm, telecommunications, etc.) be kept in operation at all times, unless prior written approval is received from the Commissioner.
2. Provide fire watch services, as necessary, during disruption of fire alarm system.

1.09 TESTS

- A. The Contractor shall demonstrate to the City of New York operation of all equipment and systems. All tests shall be completed to the satisfaction of the Commissioner. Each test shall be performed as indicated in the individual specification section.

1.10 GUARANTEES, WARRANTIES, BONDS, AND MAINTENANCE CONTROL

- A. Refer to General Conditions for procedures and submittal requirements for warranties. Refer to individual equipment specifications for warranty requirements.
1. Compile and assemble the warranties specified for Electrical work into a separated set of documents, tabulated and indexed for easy reference.
 2. Provide complete warranty information for each item to include product or equipment including duration of warranty or bond; and names, addresses, and telephone numbers and procedures for filing a claim and obtaining warranty services.
 3. Warranties for the equipment, workmanship and materials should be provided for the period of one year with the exception of the warranty on the refrigeration compressors. Five- (5) years warranty shall be provided for the refrigeration compressors.
 4. Manufacturers', in addition to Contractors' warranties, shall be provided for all Electrical equipment and accessories.
 5. All warranties are to start from the date of Substantial Completion.

1.11 OPERATIONS, TRAINING, AND MAINTENANCE MANUALS

- A. General

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Refer to General Conditions for procedures and requirements for preparation and submittal of operation and maintenance manuals for each equipment. Refer to individual equipment specifications for additional requirements. In addition, include the follow information:

1. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of all replaceable parts.
 2. Manufacturer's printed operating procedures to include start-up, break-in, routine and normal operating instructions; regulation, control, stopping, shut-down, and emergency instructions; and summer and winter operating instructions.
 3. Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassemble; aligning and adjusting instructions.
 4. Servicing instructions and lubrication charts and schedules.
- B. Bind all the other Sections maintenance manuals in a single final Operating and Maintenance Manual.
- C. Refer to Section Division 1 Sections for procedures and requirements for training on each equipment. Refer to individual equipment specifications for the additional training requirements.
- D. Contractor shall videotape all the training sessions for various equipment and systems as specified in individual sections of these Specifications. If a manufacturer's particular equipment item is furnished with a training video, the manufacturer's video shall be provided in addition to the requirements of this Section, not in lieu thereof and at no additional cost to the HSA. Contractor shall be responsible for providing informative videotapes covering all the materials and content outlined in each individual section of these Specifications.

1.12 CLEANING AND REPAIR

- A. On completion of installation, inspect interior and exterior of installed equipment. Remove paint splatters and other spots.

Vacuum dirt and debris; do not use compressed air to assist in

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cleaning. Repair exposed surfaces to match original finish.

B. Contractor shall not leave sharp exposed metal edges (bottom of threaded rods, electrical equipment supports, etc.) that could otherwise present safety hazards to the building's occupants/work staff.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 260522
WIRING SYSTEMS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

Install all conductors as required for the proper operation of the various systems specified. All connections shall be made complete, and all systems shall be energized and tested for proper operation.

1.02 QUALITY ASSURANCE

- A. Wire manufactured over one year prior to delivery to the site will not be accepted.
- B. Tapes for splices or termination shall be dated by the tape manufacturer to indicate that they have been manufactured no longer than six months prior to use in the Work of this Section.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. Conductors shall be delivered at the building in original packages or on reels, and shall have the tag of the manufacturer attached thereto indicating: Contractor's name, Project title and number, Date of manufacturing.
- B. Store material in a clean, dry space and protect from weather.

1.04 SUPPLEMENTAL SUBMITTALS

- A. Submit a Product Schedule indicating the item description and manufacturer name. The Schedule will be accepted by the BPL representative for record purposes only, provided that the items are in full compliance with the Specifications.
- B. Certificates

Provide affidavit stating that all items used are UL listed and meet the specifications.
- C. Submit field test results for wires and cables, including "Megger" readings with the method used.

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PART 2 - PRODUCTS

2.01 WIRES AND CABLES

A. General

1. Conductors shall conform to A.S.T.M. and I.P.C.E.A. standards, and be UL listed and labeled.
2. Conductors shall have 600 volts insulation and shall be of soft-annealed-uncoated copper of 98% conductivity. Copper clad conductors are not acceptable.
3. All conductors shall have identifiable lettering on the insulator jacket as to voltage rating, wire type, A.W.G. size, insulation, and manufacturer I.D.

B. Wire Description

1. Type THHN/THWN: 75°C, THHN: 90°C shall have a thermoplastic polyvinyl chloride insulation with nylon jacket for 600 volts, and shall comply with ASTM, IPCEA S-61-402 (latest edition) and NEMA WC5 (latest edition).
2. TFFN (stranded) shall be thermoplastic insulated, jacketed by abrasion and oil resistant nylon, rated at 105°C.
3. Metal Clad Cable (Type MC) shall be a factory assembly of conductors, each insulated and enclosed in a metallic flexible interlocking metal tape armor of galvanized steel or aluminum. A bare internal grounding conductor shall be included and insulated from the outer metal armor. All conductors, including grounding conductor, shall be a minimum of #12 AWG. The assembly shall be UL listed and rated 600 volts, 90°C.
4. Mineral Insulated Cable (type MI) shall consist of one or more solid copper conductors insulated with highly compressed magnesium oxide and enclosed in a continuous copper sheath. The MI cable shall be rated at 600V. The MI cable sheath shall be grounded. MI cable shall be 2 hours fire rated.

2.02 SPLICES AND TERMINATIONS

A. General

1. All materials for making splices and terminations shall be specifically designed for use with the type of wire, the cable insulation, the installation and the operating conditions of the specific application and be UL listed.

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2. Grounding conductors and bonding jumpers shall be connected by exothermic welding, listed pressure connectors, listed clamps, or other listed means.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Prior to pulling wires and cable, clean raceway systems of all foreign matter and perform all operations necessary so as not to cause damage to wires and cables while pulling.

3.02 INSTALLATION

A. General

1. Use approved lubrication when installing cables in conduits and raceways. Any pulling compounds shall be compatible with the finish of the wires and cables furnished.

C. Type THHN/THWN wire

1. Feeder and Branch Circuits
2. Remote-Control Signaling and Power-Limited Circuits: - Circuit Classes 1, 2 or 3, unless otherwise indicated.

D. Type MC Cable - Use in concealed installation of hung ceiling and gypsum board for:

1. Lighting Branch circuit.
2. Power branch circuit.

E. Type MI Cable (Mineral-Insulated Cable) - Use where required by code. Install as per manufacturer instruction.

F. Lighting Fixture Wires

1. For wiring within lighting fixtures only, where sizes #14 AWG or smaller is required, use Type TFFN.

G. Identifications of Wires and Cables

1. Each wire and cable shall be identified by its circuit in all cabinets, boxes, manholes, handholes, wireways and other enclosures and access locations, and at all terminal points.

H. Terminations

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1. For Conductor Sizes Larger Than Terminal Capacity On Equipment: Reduce the larger conductor to the maximum conductor size that terminal can accommodate (reduce section no longer than 1 ft.). Cutting of cable strands to fit terminal is not acceptable.

3.03 FIELD TESTS

- A. Test all feeder cables installed under the Contract with a 1000-volt Megohmmeter. Furnish the Commissioner with a copy of the "Megger" test report, together with an outline of the method used. Any cable not attaining the minimum reading established in the code shall be replaced.

3.04 COMMON NEUTRAL CONDUCTOR

- A. A common neutral may be used for 2 or 3 branch circuits where the circuits are indicated on the Drawings to be enclosed within the same raceway, provided each branch circuit is connected to different phase busses in the panelboard.
- B. Exceptions - The following circuits shall have a separate neutral:
 1. Circuits containing ground fault circuit interrupter devices.
 2. Circuits containing solid state dimmers.
 3. Circuits for computers, peripherals and related equipment.
 4. Circuits recommended by equipment manufacturers to have separate neutrals.

3.05 EQUIPMENT GROUNDING CONDUCTOR

Note that equipment-grounding conductors are not shown on the Contract Drawings but it shall be provided when and as required by code.

END OF SECTION

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SECTION 260523
ELEVATOR WIRING

PART 1 GENERAL

1.01 REFERENCES

- A. NEMA, ASME, and UL.

PART 2 PRODUCTS

2.01 RACEWAYS, FITTINGS AND ACCESSORIES

- A. Rigid Ferrous Metal Conduit: Steel, galvanized on the outside and enameled on the inside or hot dipped galvanized on the outside and inside, UL categorized as Rigid Ferrous Metal Conduit (identified on UL Listing Mark as Rigid Metal Conduit - Steel or Rigid Steel Conduit), by Allied Tube & Conduit Corp., Midwest Electric, Occidental Coating Co., Robroy Industries Inc., Steelduct Conduit Products, Triangle PWC Inc., or Wheatland Tube Co.
- B. Flexible Metal Conduit: Galvanized steel strip shaped into interlocking convolutions, UL categorized as Flexible Metal Conduit (identified on UL Listing Mark as Flexible Steel Conduit or Flexible Steel Conduit Type RW), by American Flexible Conduit Co., Cerro Conduit Co., Ettco Wire and Cable Corp., or International Metal Hose Co.
- C. Liquidtight Flexible Metal Conduit: Anaconda Metal Hose Anamet Inc.'s Sealtite Type UA, Electri-Flex Co.'s Type LA Liguatite, Flexible Technology Corp.'s Type UA, or Universal Metal Hose Co.'s Universal Sealflex - U.
- D. Wireways, Fittings and Accessories: 16 gage minimum, screw cover, by Hoffman Engineering Co., Keystone/Rees Inc., or Square D Co.
- E. Insulated Bushings: By Appleton Electric Co., Efcor Inc., OZ/Gedney Co., or Thomas & Betts Corp.
- F. Connectors and Couplings:
1. Couplings (For Rigid Metal Conduit): Standard threaded couplings as furnished by conduit manufacturer.
 2. Flexible Metal Conduit Connectors: Midwest Electric Mfg. Corp.'s 1708, 1736 Series, OZ/Gedney Co.'s C-8T, 24-34T, ACV-50T Series, or Thomas & Betts Corp.'s Nylon Insulated Tite-Bite Series.

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3. Liquidtight Connectors (For Liquidtight Flexible Metal Conduit): Appleton Electric Co.'s STB Series, Crouse-Hinds Co.'s LTB Series, Efcor Inc.'s 11-50B Series, Ideal Industries Inc.'s 75-521 Series, Midwest Electric Mfg. Corp.'s LTB Series, OZ/Gedney Co.'s 4Q-50T Series, Raco Inc.'s 3512 Series, or Thomas & Betts Corp.'s 5332 Series.
- G. Conduit Bodies (Threaded): Appleton Electric Co.'s Unilets, Crouse-Hinds Co.'s Condulets, Efcor Inc.'s Efcorlets, or OZ/Gedney Co.'s Conduit Bodies.
- H. Vertical Conductor Supports: Kellems Div. Harvey Hubbell Conduit Riser Grips, or OZ/Gedney Co.'s Type M, Type R.

2.02 CONDUCTORS (600 VOLTS AND UNDER) AND ACCESSORIES

- A. Date of Manufacture: No insulated conductor over one year old when delivered to the site will be acceptable.
- B. Conductors: Annealed uncoated copper or annealed coated copper in conformance with the applicable standards for the type of insulation to be applied on the conductor.
- C. Insulation:
 1. Types for General Application:
 - a. Type XHHW: Moisture and heat resistant cross-linked polyethylene insulation rated 600V conforming to U.L. requirements for type XHHW insulation (75 degrees C Wet and 90 degrees C dry).
 - b. Type THWN: Polyvinylchloride insulation rated 600V with nylon jacket conforming to U.L. requirements for type THWN insulation (75 degrees C).
 - c. Type THHN: Polyvinylchloride insulation rated 600V with nylon jacket conforming to U.L. requirements for type THHN insulation (90 degrees C).
 2. Types for Specific Application: As required by Article 620 of the National Electrical Code.
 3. Traveling Cables:
 - a. Type: Elevator cables as listed in Article 400, Table 400-4 of the National Electrical Code.
 - b. Insulation Thickness: Suitable for the voltage to which the cables are subjected.

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- c. Minimum Size:
 - 1) Lighting Circuits: No. 14 AWG.
 - 2) Operating, Control, Signaling and Communication Circuits: No. 18 AWG.
 - d. Shielded Twisted Pairs: No. 20 AWG; Number and style to suit operating, control, signaling and communication circuit requirements, minimum of 7 pair.
 - 1) Provide number required for fire speaker and fire telephone circuit requirements: No. 16AWG.
 - e. Coaxial Cable: 75 OHM, RG59/U with mechanical properties to protect against deformation.
 - f. Spare Conductors: Not less than 10 percent.
- D. Splice Connectors:
- 1. Spring Type: Amerace Corp. Elastimold Div.'s Buchanan B-Cap, Electrical Products Div./3M's Scotchlok Type Y, R, G, or B, Ideal Industries Inc.'s Wing Nuts or Wire Nuts, or Thomas & Betts Corp.'s Piggies.
 - 2. Indent Type with Insulating Jacket: Amerace Corp. Elastimold Div.'s Buchanan Pressure Connectors, Ideal Industries Inc.'s Crimp Connectors, or Thomas & Betts Corp.'s STA-KON.
- E. Terminals: Nylon insulated pressure terminal connectors by Amp Special Industries, Burndy Corp., Ideal Industries Inc., Panduit Corp., Thomas & Betts Corp., or Wiremold Co.
- F. Lugs:
- 1. Single Cable (Compression Type Lugs): Copper, one or 2 hole style (to suit conditions), long barrel; Burndy Corp.'s Hylug YA, Ideal Industries Inc.'s CCB or CCBL, or Thomas & Betts Corp.'s 54930BE or 54850BE Series.
 - 2. Single Cable (Mechanical Type Lugs): Copper, one or 2 hole style (to suit conditions); Burndy Corp.'s Quicklug Series, or Thomas & Betts Corp.'s Locktite Series.
- G. Insulation Tapes:
- 1. Plastic Tape: Bishop Electric Corp.'s No. 85, Electrical Products Div./3M's Scotch 88, Plymouth Rubber Co.'s Premium CW.
 - 2. Rubber Tape: Bishop Electric Corp.'s No. W-963, Electrical Products Div./3M's Scotch 23, or Plymouth Rubber Co.'s Splicing Compound ASTM.

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2.03 OUTLET, JUNCTION AND PULL BOXES

- A. Galvanized Steel Boxes For Concealed Work: Standard type galvanized steel boxes and device covers by Appleton Electric Co., Electrical Products Div. Midland-Ross (Steel City), or Raco Inc.
- B. Galvanized Steel Junction and Pull Boxes For Exposed Work: Code gage, galvanized steel screw cover boxes by Gray Metal Products Inc.'s, Hoffman Engineering Co., Keystone Columbia Inc., or Queen Products Co. Inc.
- C. Threaded Type Boxes For Exposed Work: Malleable iron with cadmium or galvanized finish by Appleton Electric Co., Crouse-Hinds Co., or OZ/Gedney Co.
- D. Specific Purpose Outlet Boxes: As fabricated by equipment manufacturers for mounting their equipment.

2.04 SUPPORTING DEVICES

- A. "C" Beam Clamps:
 - 1. For 1 inch Conduit Maximum: Caddy Fastener Div./Erico Products Inc.'s BC-8P and BC-8PSM Series, or HIT Spring Steel Fasteners Inc.'s CH Series.
 - 2. For 3 inch Conduit Maximum: Appleton Electric Co.'s BH-500 Series beam clamp with H50W/B Series hangers, Kindorf Elec. Prod. Div./Midland Ross Corp. 500 Series beam clamp with 6HO-B Series hanger, or OZ/Gedney Co.'s IS-500 Series beam clamp with H-OWB Series hanger.
- B. Fastening Fittings for Existing Masonry: Kindorf Elec. Prod. Div./Midland Ross Corp. E-243, E-244, E-245, E-170, Unistrut Corp.'s P2682, or Versabar Corp.'s VX-4310, VX-2308, VX-4308, VX-4309.
- C. Pipe Straps: Two hole steel conduit straps with Galv-Krom finish; Kindorf Elec. Prod. Div./Midland Ross Corp. C-144 or C-280 Series.
- D. Pipe Clamps: One hole malleable iron type clamps; Kindorf Elec. Prod. Div./Midland Ross Corp. HS-400 Series, or OZ/Gedney Co.'s 14-50 Series.

PART 3 EXECUTION

3.01 RACEWAY INSTALLATION

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- A. Raceway Types and Locations:
1. Install rigid ferrous metal conduit in all locations unless otherwise specified.
 2. Flexible Metal Conduit:
 - a. Use for short runs to equipment such as interlocks, limit switches, hall buttons or items requiring adjustments (dry locations).
 - b. Use 1 to 2 feet of flexible metal conduit for final connection to equipment subject to vibration (dry locations).
 3. Liquidtight Flexible Metal Conduit:
 - a. Use for short runs to equipment such as interlocks, limit switches, hall buttons or other items requiring adjustment (damp and wet locations).
 - b. Use for 1 to 2 foot of liquidtight flexible metal conduit for final conduit connection to equipment subject to vibration (damp and wet locations).
 4. Wireways: May be installed in dry locations.

3.02 CONDUCTOR INSTALLATION

- A. Install wiring in raceways. Exceptions:
1. Traveling cables connecting the car and hoistway wiring.
 2. As permitted otherwise by the exceptions to National Electric Code Article 620-21.
- B. Traveling Cables:
1. Terminate ends of traveling cables in NEMA 1 junction boxes equipped with labeled terminal strips and strain relief devices at both connections.

3.03 OUTLET, JUNCTION AND PULLBOX INSTALLATION

- A. Boxes For Concealed Conduit System:
1. Install boxes of depth to suit job conditions and also comply with Article 370 of the National Electrical Code.
 2. Use galvanized steel boxes with flush covers for junction and pull boxes.
- B. Boxes For Exposed Conduit System:
1. Use threaded type boxes for all Work with conduit sizes 1/2, 3/4 and 1 inch.
 2. Use threaded type boxes for all Work with conduit sizes over 1 inch in wet locations.

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3. Use galvanized steel junction and pull boxes for Work with conduit sizes over 1 inch in dry locations and damp locations.
- C. Specific Purpose Outlet Boxes: Use specific purpose outlet boxes to mount equipment when available and suitable for job conditions.

3.04 SUPPORTING DEVICE INSTALLATION

- A. Attachment of Conduit System:
1. Masonry Construction: Attach conduit to masonry construction by means of pipe straps or pipe clamps and masonry anchorage devices.
 2. Steel Beams: Attach conduit to steel beams by means of "C" beam clamps and hangers.

END OF SECTION

SECTION 260526
GROUNDING AND BONDING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. The Contractor shall provide a complete grounding of electrical systems and equipment.

PART 2 - PRODUCTS

2.01 GROUNDING CONDUCTORS

- A. Copper conductors, bare or insulated with THWN or THHN insulation.
- B. Equipment Grounding Conductors: Insulated with green-colored insulation.
- G. Copper Bonding Conductors: As follows:
1. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG copper conductor, 1/4 inch (6.4 mm) in diameter.
 2. Bonding Conductor: No. 4 or No. 6 AWG, stranded copper conductor.
 3. Bonding Jumper: Bare copper tape, braided bare copper conductors, terminated with copper ferrules; 1-5/8 inches (42 mm) wide and 1/16 inch (1.5 mm) thick.
 4. Tinned Bonding Jumper: Tinned-copper tape, braided copper conductors, terminated with copper ferrules; 1-5/8 inches (42 mm) wide and 1/16 inch (1.5 mm) thick.

2.02 CONNECTOR PRODUCTS

- A. Comply with IEEE 837 and UL 467. Listed for use for specific types, sizes, and combinations of conductors and connected items.
- B. Bolted Connectors: Bolted-pressure-type connectors, or compression type.
- C. Welded Connectors: Exothermic-welded type, in kit form, and selected per manufacturer's written instructions.
- D. All terminal lugs and bolts shall be 98% silicon bronze copper.

PART 3 - EXECUTION

3.01 APPLICATION

- A. In raceways, use insulated equipment grounding conductors.
- B. Exothermic-welded Connections: Use for connections to structural steel and for underground connections.
- C. Equipment Grounding Conductor Terminations: Use bolted pressure clamps.

3.02 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Bonding Straps and Jumpers: Install so vibration by equipment mounted on vibration isolation hangers and supports is not transmitted to rigidly mounted equipment. Use exothermic-welded connectors for outdoor locations, unless a disconnect-type connection is required; then, use a bolted clamp. Bond straps directly to the basic structure taking care not to penetrate any adjacent parts. Install straps only in locations accessible for maintenance.

3.03 CONNECTIONS

- A. General: Make connections so galvanic action or electrolysis possibility is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.
 - 1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer to order of galvanic series.
 - 2. Make connections with clean, bare metal at points of contact.
 - 3. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.
 - 4. Make aluminum-to-galvanized steel connections with tin-plated copper jumpers and mechanical clamps.
 - 5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

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- B. Exothermic-Welded Connections: Comply with manufacturer's written instructions. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.
- C. Equipment Grounding Conductor Terminations: For No. 8 AWG and larger, use pressure-type grounding lugs. No. 10 AWG and smaller grounding conductors may be terminated with winged pressure-type connectors.
- D. Noncontact Metal Raceway Terminations: If metallic raceways terminate at metal housings without mechanical and electrical connection to housing, terminate each conduit with a grounding bushing. Connect grounding bushings with a bare grounding conductor to grounding bus or terminal in housing. Bond electrically noncontinuous conduits at entrances and exits with grounding bushings and bare grounding conductors, unless otherwise indicated.
- E. Tighten screws and bolts for grounding and bonding connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A [and UL 486B].
- F. Compression-Type Connections: Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by connector manufacturer. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.
- G. Moisture Protection: If insulated grounding conductors are connected to ground rods or grounding buses, insulate entire area of connection and seal against moisture penetration of insulation and cable.

3.04 TESTING

- A. Testing:
 - 1. After installing grounding system but before permanent electrical circuitry has been energized, test for compliance with requirements.
 - 2. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, and at ground test wells.

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Measure ground resistance not less than two full days after the last trace of precipitation, and without the soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance. Perform tests, by the fall-of-potential method according to IEEE 81.

END OF SECTION

SECTION 260533
RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide raceways, fittings, supporting devices, boxes and accessories required for a completely installed system and its proper operation.
- B. Coordinate layout and installation of raceways, boxes, enclosures, cabinets, and suspension and support system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Firestopping/Smoke Seals..... Section 078400

1.03 SUPPLEMENTAL SUBMITTALS

- A. Submit a Product Schedule indicating the item description and manufacturer name. The Schedule will be accepted by the Commissioner for record purposes only, provided that the items are in full compliance with the Specifications.
- B. Certificates

Provide affidavit stating that all items used are UL listed and meet the specifications.
- C. Coordination drawings for conduit buried in concrete slabs, conduit in the ground and service entrance conduit.
Provide conduit routing plan, drawn to scale, showing structural members, architectural features, HVAC and P&D items.

PART 2 - PRODUCTS

2.01 RACEWAYS

- A. Rigid Galvanized Conduit (RGC)

Steel conduit, Schedule 40, hot dipped galvanized, with Underwriters Laboratories label stamped on each length.

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B. Electric Metallic Tubing (EMT)

Industry standard conduit with Underwriters Laboratories label stamped on each length.

C. Flexible Metal Conduit (FMC)

Galvanized steel conduit, Underwriter Laboratories listed.

D. Liquid-tight Flexible Metal Conduit (LTFMC)

Industry standard conduit, Underwriter Laboratories listed.

E. Surface Metal Raceway

Raceway and all components shall be listed by Underwriters Laboratories and they shall be as manufactured by Mono-Systems, Hubbell Inc. or Wire Mold Co. Single Channel (minimum): Wire Mold V700, Hubbell Inc. 750 Series or Mono-Systems SMS700. Dual Channel: Wiremold V4000, Wiremold DS4000 Series, Hubbell Inc. 4000 Series or Mono-Systems SMS4200. The metal raceway shall be of a two-piece design with a base and snap-On cover.

2.02 SUPPORTING DEVICES

A. Hangers

1. Separate hangers shall be installed for supporting conduits. Wherever possible hangers shall be supported from concrete slab by inserts.
2. Hangers and piping installed by other trades shall not be used for supporting electric conduits.

B. Individual and multiple pipe hangers and riser clamps including all parts and hardware shall be hot-dipped galvanized throughout. All U-bolts, clamps, attachments and hardware for hanger assembly and conduits shall be provided.

Each multiple hanger shall be designed to support a load equal to or greater than the sum of the weights of the conduits, wires and hanger itself, plus 200 pounds.

C. Use pipe straps and specified method of attachment where conduit is installed proximate to surface of steel stud or masonry construction.

1. Use hangers secured to surface with specified method of attachment where conduit is suspended from the surfaces.

D. Use "C" beam clamps and hangers where conduit is supported from steel beams.

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- E. Use deck clamps and hangers to support conduits from steel decking having hanger tabs. One conduit per tab is permitted.
 - 1. Where conduit is supported from steel decking which does not have hanger tabs, use clamps and hangers secured to decking, utilizing specified method of attachment.
- F. Use channel support system supported from structural steel for multiple parallel conduit runs.
- G. Where conduits are installed above ceiling, do not rest conduit directly on runners bars, T-Bars, etc.
 - 1. Conduit Sizes 2-1/2" and Smaller: Support conduit from ceiling supports or from construction above ceiling.
 - 2. Conduit Sizes Over 2-1/2": Support conduit from beams, joist, or trusses above ceiling.
- H. Conduits shall be supported within three (3) feet of any kind of fitting and at every outlet or junction box, panel, etc. This shall apply to both horizontal and vertical runs.

2.03 BOXES AND ENCLOSURES

- A. The Contractor shall provide outlet boxes and enclosures appropriate for the purpose at all locations where the Drawings require the installation of electrical devices or electrical equipment. For exposed conduit systems, the contractor shall use cast outlet boxes in all locations below 8'-0" with number of threaded hubs equal to the number of conduits, except when installing surface metal raceway contractor shall provide boxes from the same manufacturer of the surface metal raceway.
- B. Where the Contractor selects and installs an item of equipment that requires additional boxes, fittings, etc., or a modification of the conduit system indicated on the Drawings, such additional boxes, fittings, etc. shall be furnished and installed and such modifications shall be performed by the Contractor as part of the Contract, without extra compensation from the Commissioner.

2.04 FITTINGS AND ACCESSORIES

- A. All fittings and accessories shall be UL listed and compatible with selected raceways and suitable for use location. Compression fittings shall be provided with the installation of EMT.

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2.05 CONDUIT SIZES

- A. Where conduit is required to be installed, its nominal diameter shall be not less than 3/4 inch.
- B. For conduit placed in metal deck slabs, the maximum size is 1".
- C. For conduit placed in 4" formed slabs, the maximum size is 3/4" and 1" for slabs greater than 4".

2.06 SLEEVES FOR CONDUIT

- A. Provide sleeves, Schedule 40, galvanized steel, for all electrical conduits and wiring passing through foundation, floors, roofs, beams. Provide as specified herein:
 - 1. Sleeves passing through fire-rated walls, floors, roofs, ceilings, and other areas where indicated: the space between sleeve and pipe/conduit shall be firestopped to comply with fire-rating of assembly through which it passes.

PART 3 - EXECUTION

3.01 RACEWAY SCHEDULE

- A. Rigid Galvanized Steel Conduit (RGC)

Provide RGC as follows:

- 1. All outdoor raceway.
- 2. Concrete encased and exposed.

- B. Electrical Metallic Tubing (EMT)

Provide EMT for feeders and branch circuits for power, lighting and low voltage systems.

- B. Metal Clad Cable (MC)

Provide MC for branch circuit in concealed installation within hung ceiling and gypsum board partitions.

- C. Flexible Metal Conduit (FMC)

- 1. Provide FMC for final conduit connection to:
 - a. Recessed lighting fixtures in suspended ceilings.

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- b. Emergency lighting battery units.
 - c. Motors
 - d. Equipment subject to vibration (dry locations).
 - e. Equipment requiring flexible connections for adjustment or alignment (dry locations).
2. In all cases, install equipment-grounding conductor in the flexible raceway and bond at each box or equipment to which flex is connected.
 3. Grounding conductors are not shown on the Drawings but shall be included within each branch and main circuit feeder.

D. Surface Metal Raceway

Provide surface metal raceway in finished spaces.

1. Secure raceway of one-piece type every 36" alternately with one-hole straps, and support clips (strap, support clip, strap, etc.). Secure raceway of two-piece type every 36" alternately with straps and fasteners through back of raceway (strap, fastener through back, strap, etc.).
 2. Install separate grounding conductor. Grounding conductors for surface metal raceways are not shown on the Drawings.
- E. Liquid-tight Flexible Metal Conduit (LFMC)
- Provide LFMC for final conduit connection to:
1. Motors and Equipment subject to vibration in damp and wet locations and for Kitchen appliances.
 2. Equipment requiring flexible connection for adjustment or alignment in damp and wet locations.

3.02 RACEWAY INSTALLATION

A. General

1. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

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2. All conduit systems shall be mechanically and electrically continuous.
3. The ends of all conduit shall be square, carefully reamed out to full size, shouldered in the fittings, and bushed or capped wherever stubbed clear of the building.
4. Not more than four (4) 90 degree ells or bends or the equivalent shall be used in any single run of conduit. Conduits for telephone, television, video surveillance or data cable shall not have more than two (2) 90 degree bends or the equivalent. Where more bends are necessary, provide suitable code size pull boxes or fittings. All conduits for telephone, television, video surveillance or data systems cable shall have large radius bends. Pull boxes shall be installed in accessible locations.
5. Conduit installed on equipment shall not obstruct any removable panel, access door, or control. Control apparatus, outlet, junction, and pull boxes shall be installed so as not to interfere with any piping, fixtures, or equipment.
6. Complete raceway installation before starting conductor installation.
7. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.
 - a. Install concealed raceways with a minimum of bends in the shortest practical distance, considering type of building construction and obstructions, unless otherwise indicated.
8. Conduits installed across seismic separations (expansion joints) shall include, but not limited to, the following:
 - a. The conduit (rigid steel or EMT) shall be securely anchored on each side of the seismic separation with a pipe hanger per SMACNA details.
 - b. The spacing between conduit ends shall be 36" minimum.
 - c. A liquid-tight flexible metal conduit of the same size shall be installed between the conduit ends spanning the seismic separation.
 - d. The liquid-tight flexible metal conduit shall be of sufficient length to provide for a longitudinal

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and axial deflection of two (2)-inches minimum in all directions.

9. Terminations:

- a. Where raceways are terminated with locknuts and bushings, align raceways to enter squarely and install locknuts with dished part against box. Use two locknuts, one inside and one outside box.
- b. Where raceways are terminated with threaded hubs, screw raceways or fittings tightly into hub so end bears against wire protection shoulder. Where chase nipples are used, align raceways so coupling is square to box tighten chase nipple so no threads are exposed.

10. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire.

11. Rooftop conduits (rigid steel) shall be neatly grouped and installed parallel to the building lines. Support conduits on minimum 4 inches x 6 inches on pressure treated lumber sleepers at minimum 5 feet spacing.

B. Exposed conduits

Exposed conduits shall be rigidly fastened to structure, or to rigid hangers or angle irons connected to structure at intervals not exceeding eight feet. Where the conduits or surface metal raceways are installed exposed, they shall follow the architectural lines of the enclosure and shall be run as to be as inconspicuous as possible. Conduits or surface metal raceways shall not be installed diagonally on ceilings, walls or columns.

C. Conduit Installed Concealed in Existing Building

Where new partition walls and new hung or furred ceilings are being erected or where existing walls are to have a new tile finish, the conduits and related equipment shall be installed concealed in walls and in hung or furred ceilings.

3.03 CONDUIT TO MOTORS, TABLES, ETC. IN SHOPS AND OTHER ROOMS

- A. Flexible Connections: Use maximum of 72 inches (1830 mm) of flexible conduit for recessed and semi recessed lighting fixtures; for equipment subject to vibration, noise transmission, or movement; and for all motors. Install separate ground conductor across flexible connections.

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3.04 MOUNTING DEVICES

A. Height of Wall Outlets

Unless otherwise indicated, locate outlet boxes with their center lines at the following elevations above finished floor:

Alarm Indicating Devices	8'-0" to center where ceiling height allows a minimum of 2" clearance between ceiling and top otherwise mount so that its top is 2" below finished ceiling.
Exit Lights (N/A)	8'-0" where ceiling height allows a minimum of 6" clearance between ceilings and top light, otherwise mount exit light so that its top is 6" below finished ceiling. Adjust height and clearances as required to suit installation over doors.
Indicators	8'-0" AFF.
Fire Alarm Strobe Lights	80" A.F.F. or 6" below the ceiling whichever is lower
Manual Fire Alarm Boxes	3'-6" (4'-0" if 3'-6" is not possible)
Single & Duplex Receptacles	1'-6"
Special Purpose Receptacles	As indicated on the Drawings.
Switches	4'-0"
Telephone (N/A)	1'-6"

3.05 PAINTING

- A. All exposed raceways and boxes in finished parts of the building shall be painted. Painting shall consist of a prime coat and a finished coat, color as selected by Commissioner. Factory painting will be accepted as a prime coat.

END OF SECTION

SECTION 262416
PANELBOARDS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

Provide panelboards.

1.02 SUPPLEMENTAL SUBMITTALS

A. Submittal Packages

Submit the Shop Drawings, and the product data specified below at the same time as a package.

B. Shop Drawings; include the following for each panelboard:

1. Dimensioned plans, elevations, sections, and details. Show tabulations of installed devices equipment features, and ratings.
2. Cabinet and gutter size.
3. Bus configuration, voltage and current rating.
4. Unless otherwise noted, Panelboard short circuit rating shall conform to U.L. Standards for fully rated systems only.
5. Features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.

D. Field Test Reports: Submit written test reports and include the following:

1. Test Procedures used
2. Test results

E. Panelboard Schedules: For installation in panelboard. Submit final versions after load balancing.

1.03 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in New York City Electrical Code - 2007, by a testing agency

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acceptable to the authorities having jurisdiction, and marked for intended use.

- B. Comply with NEMA PB1.
- C. Comply with New York City Electrical Code - 2007.

1.04 COORDINATION

- A. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, and encumbrances to workspace clearance requirements.

PART 2 - MATERIAL - PRODUCTS

2.01 PANELBOARDS - CIRCUIT BREAKER TYPE

- A. Equipment manufactured by Electrtech, All City switchboard Corp., Metropolitan electric Manufacturing Co., Electric Switchboard Co., General Electric Co., Siemens, Square D Co., Eaton/Cutler-Hammer having:
 - 1. Bus bars and lugs shall not be less than 98% conductivity, hard drawn copper. All copper bus connections shall be bolted with lock washers and joints shall be silver plated.
 - 2. Full capacity copper neutral bus in panelboards where neutrals are required.
 - 3. Copper equipment grounding bus in panelboards where equipment grounding conductors are required.
 - 4. Section designated "space" or "provision for future breaker" equipped to accept future circuit breakers.
 - 5. Molded-Case Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Circuit breakers shall be

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bolt on. Plug-in type breakers are not acceptable.

B. GFCI circuit breakers shall be provided for designated circuits.

C. Panelboard Cabinets

1. Flush and surface mounted cabinets. NEMA PB 1, Type 1, to meet environmental conditions at installed location.

2. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box.

3. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.

4. Finish: Manufacturer's standard enamel finish over corrosion-resistant treatment or primer coat.

D. Locks

Provide locks for panelboard cabinets located outside electrical rooms/closets. Locks shall be of approved cylinder, paracentric type, Yale No. 511S, Key change No. 47. Two keys shall be supplied with each lock.

E. Directories

A directory consisting of a steel or aluminum frame with a non-breakable, non-inflammable plastic face and cardboard or heavy white paper shall be installed on the inside of the door of cabinets for all panelboards. Frame shall be welded to door or fastened by approved screws to a mat in such a manner as not to leave anything projecting on the outside of the door. The cardboard or heavy paper shall have typewritten directory thereon stating the following: The number of each circuit together with the name of circuits, load controlled, size of circuit feeder

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and subfeeder conductors. Directory frames shall be not less than 8" x 8".

2.02 NAMEPLATES

- A. Each unit of equipment shall be provided with a riveted phenolic nameplate, identifying the equipment and its rating.

- B. On each circuit breaker and fused switch: ampere rating, fuses size and fuses type (or circuit breaker type and setting) and circuit designation.

- C. On panelboard: ampere rating, nominal voltage, phases and panelboard designation.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install panelboards in accordance with NEMA Publication No. PB1.1 "General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 Volts or less".

- B. Cabinet Supports
 - a. Panelboards set on walls where a chase is not provided by others, shall be provided with Kindorf channels on both sides of the panel with these channels running from floor slab to ceiling slab and secured to both.

 - b. Surface mounted panels shall be fastened to walls by expansion shields, or the equivalent. Heavy panelboards shall be supported from the floor by means of approved angle iron framework.

 - c. Steel angle or channel supporting members shall be provided to adequately support distribution equipment for floor mounting with all necessary bracing.

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C. Setting of Cabinets

Elsewhere in the building, panelboards shall be set so that top of cabinet is approximately 6 feet 6 inches above floor.

D. Cleaning

On completion of installation, inspect interior and exterior of panelboards. Remove paint splatters and other spots. Vacuum dirt and debris; do not use compressed air to assist in cleaning. Repair exposed surfaces to match original finish.

3.02 TESTS

A. Prepare for acceptance tests as follows:

1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder and control circuit.

2. Test continuity of each circuit.

B. Testing: After installing panelboards and after electrical circuitry has been energized, demonstrate product capability and compliance with requirements.

C. Balancing Loads: After Substantial Completion, but not more than 60 days after Final Acceptance measure load balancing. Difference exceeding 20% between phase load is not acceptable. Rebalance and recheck as necessary to meet this minimum requirement.

END OF SECTION

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SECTION 262419
MOTORS, MOTOR STARTERS,
AND CONTROL EQUIPMENT

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide and make final connections to all motors, motor control centers, starters and accessories, connect equipment furnished under other Sections of the Specifications.

Obtain all wiring diagrams and other information furnished by the manufacturer of the equipment. Coordinate and supplement the wiring diagrams and schedules with any additional function of operational requirements specified in other Sections of the Specifications. Provide control equipment to execute the sequence of operation.

1.02 REFERENCES

- A. NEMA MG-1 - Motors and Generators
- B. NEMA ICS - General Standards for Industrial Control and Systems

1.03 SUPPLEMENTAL SUBMITTALS

- A. Submittal Package
- Submit product data for motors and starters as a package.
- B. Product Data:
1. For each type of controller and each type of motor-control center, include dimensions and manufacturer's technical data on features, performance, electrical characteristics, ratings, and finishes.
- C. Shop Drawings: For each starter and controller.
- Dimensioned plans, elevations, sections, and details, including required clearances and service space around equipment. Show tabulations of installed devices, equipment features, and ratings. Include the following:
- a. Each installed unit's type and details.
 - b. Nameplate legends.

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- c. Short-circuit current ratings of buses and installed units.
- d. Vertical and horizontal bus capacities.
- e. UL listing for series rating of overcurrent protective devices in combination controllers.

Feature, characteristics, ratings, and factory settings of each motor-control center unit.

Wiring Diagrams: Power, signal, and control wiring for class and type of motor-control. Differentiate between manufacturer-installed and field-installed wiring. Provide schematic wiring diagram for each type of controller.

- D. Coordination Drawings: Floor plans showing dimensioned layout, required working clearances, and required area above and around motor-control centers where pipe and ducts are prohibited.
- E. Field Test Reports: Written reports specified in Part 3.
- F. Manufacturer's field service report.
- G. Maintenance Data: For starters and controllers, all installed devices, and components to include in maintenance. In addition include the following:
 - 1. Routine maintenance requirements for motor-control centers and all installed components.
 - 2. Manufacturer's written instructions for testing and adjusting over current protective devices.
- H. Load-Current and Overload-Relay Heater List: Compile after motors have been installed and arrange to demonstrate that selection of heaters suits actual motor nameplate full-load currents.
- I. Load-Current and List of Settings of Adjustable Overload Relays: Compile after motors have been installed and arrange to demonstrate that dip switch settings for motor running overload protection suit actual motor to be protected.

1.04 QUALITY ASSURANCE

- A. Source Limitations: Obtain LonWorks compatible controllers of a single type through one source from a single manufacturer. Where LonWorks compatible controllers are not available from the unit manufacturer,

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provide "gateway" to translate the unit manufacturer's protocol to the LonTalk protocol.

- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Comply with NFPA 70.

1.05 COORDINATION

- A. Coordinate layout and installation of starters and motor-control centers with other construction including conduit, piping, equipment, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.
- B. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases.
- C. Coordinate installation of roof curbs, equipment supports, and roof penetrations.
- D. Coordinate features of motor-control centers, installed units, and accessory devices with pilot devices and control circuits to which they connect.
- E. Coordinate features, accessories, and functions of each motor-control center, each controller, and each installed unit with ratings and characteristics of supply circuit, motor, required control sequence, and duty cycle of motor and load.

PART 2 - PRODUCTS

2.01 MOTORS

- A. Motor (Nameplate) Voltage
 - 1. 120/208 Volt, Three Phase, 4 Wire Incoming Service
 - a. Motors less than 1/2 HP: NEMA standard motor voltage 115V single phase, 60 Hz.
 - b. Motors 1/2 HP and larger: NEMA standard motor voltage 208V, three phase, 60 Hz.
- B. Single phase motor shall be capacitor start, open drip-proof unless otherwise noted.

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- C. Three-phase motors shall be squirrel-cage, open drip-proof unless otherwise noted.
- D. Motors in general shall have cast iron frame, full voltage starting.
- E. Drawings shall indicate horsepower, voltage and RPM.
- F. Temperature rise and insulation system class shall conform to NEMA standards.
- G. Motors shall be of the highest grade manufactured by: Allis Chalmers Mfg. Co., Baldor Electric Co., Century Electric Co., Continental Electrical Motors Co., General Dynamics Corps., Howell Electric Motors Co., Imperial Electric Co., Peerless Electric Co., Reliance Electric & Engineering Co., Wagner Electric Corp., or Westinghouse Electric & Mfg. Co., or approved equal.
- H. Motor nameplate data shall be in accordance with NEMA Standards.

2.02 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Starters:
 - a. Eaton Corp.; Cutler-Hammer Products.
 - b. General Electrical Distribution & Control.
 - c. Rockwell Automation Allen-Bradley Co.; Industrial Control Group.
 - d. Square D Co.
 - e. Or approved equal.

2.03 MAGNETIC MOTOR STARTERS

- A. Description: NEMA ICS 2, Class A, full voltage, nonreversing, across the line, unless otherwise indicated.
- B. Control Circuit: 120 V
- C. Combination Starter: Factory-assembled combination starter and disconnect switch.
 - 1. Fusible Disconnecting Means: NEMA KS 1, fusible switch with rejection-type fuse clips rated for fuses. Select and size fuses to provide Type 2

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protection according to IEC 947-4-1, as certified by a nationally recognized testing laboratory.

2. Nonfusible Disconnecting Means: NEMA KS 1, nonfusible switch.
 3. Circuit-Breaker Disconnecting Means: NEMA AB 1, motor-circuit protector with field adjustable, short-circuit trip coordinated with motor locked-rotor amperes.
- D. Overload Relay: Ambient-compensated type with inverse-time-current characteristic. Provide with heaters or sensors in each phase matched to nameplate full-load current of specific motor to which they connect and with appropriate adjustment for duty cycle.
- E. Star-Delta Controller: NEMA ICS 2, closed transition with adjustable time delay.

2.04 FEEDER OVERCURRENT PROTECTION

- A. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits.
- B. Fusible Switch: NEMA KS 1, Type HD, clips to accommodate specified fuses with lockable handle.

2.05 FACTORY FINISHES

- A. Finish: Manufacturer's standard paint applied to factory-assembled and tested controllers before shipping.

2.06 MANUAL ENCLOSED STARTERS

- A. Description: NEMA ICS 2, general purpose, Class A, with toggle action and overload element.

2.07 MAGNETIC ENCLOSED STARTERS

- A. Description: NEMA ICA 2, Class A, full voltage, nonreversing, across the line, unless otherwise indicated.
- B. Control Circuit: 120 V
- C. Combination starter: Factory-assembled combination starter and disconnect switch.

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1. Fusible Disconnecting Means: NEMA KS 1, fusible switch with rejection-type fuse clips rated for fuses.
 2. Nonfusible Disconnecting Means: NEMA KS 1, nonfusible switch.
 3. Circuit-Breaker Disconnecting Means: NEMA AB 1, motor-circuit protector with field adjustable, short-circuit trip coordinated with motor locked-rotor amperes.
- D. Overload Relay: Ambient-compensated type with inverse-time-current characteristic. Provide with heaters or sensors in each phase matched to nameplate full-load current of specific motor to which they connect and with appropriate adjustment for duty cycle.
- E. Motor Control Push Button Stations and H-O-A Switches
- Provide push button stations of the momentary contact type with pilot light, installed with a common faceplate.
- Provide "Hand-Off-Automatic" (H-O-A) switches for all starters controlling equipment with automatic actuating apparatus.

2.08 PUSHBUTTON STATIONS

A. Normal Duty

Momentary Start-Stop with pilot light in NEMA 1 enclosure.

2.09 KEY-OPERATED CONTROL STATION

- A. Key-operated control station shall be pushbutton stop, key-operated reset type. Control station (DC) shall be ASCO cat. # 216B89 in conjunction with pushbutton control stations ASCO 173A19 (flush mounting) or ASCO 173A20 (surface mounting), or approved equal of Square D.
- B. Key-operated control station shall enable shutting down power panels in case of emergency and shall reset the power "on" by means of a key.

2.10 VARIABLE-FREQUENCY DRIVES

- A. Description: Provide for non-packaged systems conforms to NEMA ICS 2, NFPA and IEC standards, pulse-width-

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modulated, variable-frequency drive; listed and labeled as a complete unit and arranged to provide variable speed of a NEMA MG 1, Design B, 3-phase, induction motor by adjusting output voltage and frequency.

- B. Design and Rating: Match load type such as fans, blowers, and pumps; and type of connection used between motor and load such as direct or through a power-transmission connection.
- C. Isolation Transformer: Match transformer voltage ratings and capacity to system and motor voltages; and controller, motor, drive, and load characteristics. Add 3% line reactor on the line side or 5% line reactor on the load side of the drive.
- D. Output Rating: 3-phase; 6 to 60 Hz, with voltage proportional to frequency throughout voltage range.
- E. Starting Torque: 100 percent of rated torque or as indicated.
- F. Speed Regulation: Plus or minus 1 percent.
- G. Thermal management system for operation in extreme Temperature: 14o F to 122o F (-10o C to 50o C).
- H. Efficiency: 95 percent minimum at full load and 60 Hz.
- I. Minimum Displacement Power Factor at Input Terminals: 95 percent.
- J. Isolated control interfaced allows controller to follow control signal over an 11:1 speed range.
 - 1. Electrical Signal: 4 to 20 mA at 24 V.
 - 2. Pneumatic Signal: 3 to 15 psig (20 to 104 kPa).
- K. Internal Adjustability: Include the following internal adjustment capabilities:
 - 1. Minimum Speed: 5 to 25 percent of maximum rpm.
 - 2. Maximum Speed: 80 to 100 percent of maximum rpm.
 - 3. Acceleration: 2 to 22 seconds.
 - 4. Deceleration: 2 to 22 seconds.
 - 5. Current Limit: 50 to 110 percent of maximum rating.
- L. Multiple-Motor Capability: Controller suitable for service to multiple motors and having a separate overload relay and protection for each controlled motor. Overload relay shall shut off the controller and motors served by it when overload relay is tripped.

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- M. Self-protection and reliability features shall include the following:
1. Input transient protection by means of surge suppressors.
 2. Add 5% line reactors.
 3. Motor Overload Relay: Adjustable and capable of NEMA 250, Class 10 performance.
 4. Notch filter to prevent operation of the controller-motor-load combination at a natural frequency of the combination.
 5. Instantaneous overcurrent trip.
 6. Loss-of-phase protection.
 7. Reverse-phase protection
 8. Under-and overvoltage trips.
 9. Over temperature trip.
 10. Short-circuit protection.
 11. Under-voltage ride-thru qualified to the SEMI-47 standard.
- N. Automatic Reset/Restart: Attempt three restarts after controller fault or on return of power after an interruption and before shutting down for manual reset or fault correction. Restarting during deceleration shall not damage controller, motor, or load.
- O. Power-Interruption Protection: Prevents motor from re-energizing after a power interruption until motor has stopped.
- P. Status Lights: Door-mounted LED indicators shall indicate the following conditions:
1. Power on
 2. Run
 3. Overvoltage
 4. Line fault
 5. Overcurrent
 6. External fault
- Q. Panel-Mounted Operator Station: Start-stop and auto-manual selector switches with manual speed control potentiometer and elapsed time meter.
- R. Indicating Devices: Meters or digital readout devices and selector switch, mounted flush in controller door and connected to indicate controller output current, voltage, and frequency.
- S. Manual Bypass: Magnetic contactor shall be arranged to safely transfer motor between controller output and bypass

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controller circuit when motor is at zero speed. Controller-off-bypass, selector-switch indicator lights set and indicate mode selection.

- T. Integral Disconnecting Means: NEMA AB 1, molded-case switch; KS 1, non-fusible switch with lockable handle.
- U. Bypass Controller: NEMA ICS 2, full-voltage, nonreversing controller with across-the-line starting capability in manual-bypass mode. Provide motor overload protection under both modes of operation with control logic that allows common start-stop capability in either mode.
- V. Isolating Switch: Non-load-break switch arranged to isolate variable-frequency controller and permit safe troubleshooting and testing, both energized and de-energized, while motor is operating in bypass mode.
- W. Remote Indicating Circuit Terminals: Mode selection, controller status, and controller fault.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. For control equipment at walls, bolt units to wall or mount on lightweight structural-steel channels bolted to wall. For controllers not at walls, provide freestanding racks.
- B. Install freestanding equipment on concrete bases.

The arrangement and mounting of all control equipment shall be such, that the handle of the safety switch will be easily operable from the floor, at approximately 5'-0" mounting height.

Manually operated control equipment shall have handles or push buttons 4-feet from floor, unless otherwise noted on Drawings.

Provide a white core phenolic nameplate on all motor control equipment.

- C. In general, roof fan motor circuit wiring is run to starters in grouped locations. Starters shall be mounted on steel framework where shown on Drawings.

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Pilot light assemblies shall be installed in the covers of respective starters

- D. Connect hand-off-automatic switch and other automatic-control devices where available.
1. Connect selector switches to bypass only manual-and automatic-control devices that have no safety functions when switch is in hand position.
 2. Connect selector switches with motor-control circuit in both hand and automatic positions for safety-type control devices such as low-and high-pressure cutouts, high-temperature cutouts, and motor overload protectors.
 3. [For each motor automatically and/or manually controlled or monitored by the fire alarm system, include control wiring extensions as specified as part of the fire alarm system to an adjacent FPA addressable module.]
 4. For each motor supplied by a VFD, run 2 #14 from the disconnect switch at the motor to the VFD, and connect so as to de-energize "start circuit" when switch is open. Run with power circuitry or in separate raceway.
 5. Control wiring for single phase HVAC motors with manual controllers shall be provided as part of the electrical work. For each such motor, provide wiring and connect to all outlying control devices as directed. Refer to GHAC drawings and specifications for quantities and locations.
- E. Control wiring for plumbing motors will be provided as part of the work of Division 23 as applicable.
- F. Control wiring shall be accomplished utilizing #14 AWG copper conductor with THWN installation.
- G. Nameplates

Identify starters, motor-control center, motor-control center components, and control apparatus wiring. Identify each pushbutton station and motor starter. Identify each interlock switch, indicating purpose of switch.

1. NEMA 1 Enclosures: Rivet or bolt nameplate to the cover

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2. NEMA 3R, 4, 4X, 7, or 9 Enclosures: Attach nameplates to the cover using adhesive specifically designed for the purpose.

3.02 FIELD TESTS

- A. Perform tests, in the presence of the Commissioner to demonstrate:
 1. That each control device and its related motor starter operate properly.
 2. That each overload and undervoltage protection safety device functions properly.
 3. That each safety shut-off valve and device operates properly.
- B. Tests shall be performed in accordance with the equipment manufacturers' start-up and field test instructions and made jointly with all relevant trades.
- C. Should the tests reveal any defects, promptly correct such defects and rerun the tests until the entire installation is satisfactory in all respects.
- D. Tests shall be coordinated by the Contractor who shall provide (48) hrs. min. notice to the Commissioner for approval of schedule.

3.03 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain motor-control centers [and variable-frequency drives].
 1. Train Owner's maintenance personnel on procedures and schedules for starting and stopping, troubleshooting, servicing, and maintaining equipment and schedules.
 2. Review data in maintenance manuals.

END OF SECTION

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SECTION 262812
SAFETY SWITCHES

PART 1 GENERAL

1.01 SUBMITTALS

- A. Product Data: Catalog sheets, specifications and installation instructions.

PART 2 PRODUCTS

2.01 SAFETY SWITCHES (SINGLE THROW)

- A. NEMA 1, 3R,: Heavy Duty Series, Cutler-Hammer Inc.'s DH, General Electric Co.'s Type H, Square D Co.'s Heavy Duty Series, or Westinghouse Electric Corp.'s H-600; having:
1. Fuses, or unfused as indicated on drawings.
 2. Fused switches equipped with fuseholders.
 3. NEMA 1 enclosure unless otherwise indicated on drawing.
 4. 240V rating for 120V, 208V, or 240V, circuits.
 5. Solid neutral bus when neutral conductor is included with circuit.
 6. Ground bus when equipment grounding conductor is included with circuit.
 7. Current rating and number of poles as indicated on drawings.

2.02 NAMEPLATES

- A. General: Precision engrave letters and numbers with uniform margins, character size minimum 3/16 inch high.
1. Phenolic: Two color laminated engravers stock, 1/16 inch minimum thickness, machine engraved to expose inner core color (white).
 2. Aluminum: Standard aluminum alloy plate stock, minimum .032 inches thick, engraved areas enamel filled or background enameled with natural aluminum engraved characters.
 3. Materials for Outdoor Applications: As recommended by nameplate manufacturer to suit environmental conditions.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install switches so that the maximum height above the floor to the center of the operating handle does not exceed 5'-6".
- B. Identify each safety switch, indicating purpose or load served:
 - 1. NEMA 1 Enclosures: Rivet or bolt nameplate to the cover.
 - 2. NEMA 12 Enclosures: Rivet or bolt and gasket nameplate to the cover.
 - 3. NEMA 3R: Attach nameplate to the cover using adhesive specifically designed for the purpose, or mount nameplate on wall or other conspicuous location adjacent to switch. Do not penetrate enclosure with fasteners.
- C. Paint switches used for the fire protective signaling system with red paint and identify - "FIRE ALARM CIRCUIT CONTROL".
- D. Paint switches used for oil burner emergency switch with red paint and identify "OIL BURNER".

END OF SECTION

SECTION 265190
INTERIOR LIGHTING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide lighting fixtures, supports and accessories including plaster frames, trim rings and backboxes for plaster, drywall, or concrete ceilings as necessary.
- B. The types of lighting fixtures to be installed are indicated and detailed on fixture schedule on the Drawings, which also provides details on manufacturers, catalog numbers, lamping, etc.
- C. Coordinate with other trades to avoid conflicts between installation of fixtures and supports with the installation of mechanical equipment, ceiling structures, etc.
- D. All lighting fixtures shall operate on nominal volts, 60 Hz single phase service as indicated on the Drawings and in the Specifications.

1.02 SUPPLEMENTAL SUBMITTALS

- A. Product Data
 - 1. Provide standard print catalog sheets, Specifications, installation instructions, and photometric data from a recognized independent laboratory for each type of fixture. Submittals that do not include distribution curves and photometric data will be rejected. All options and specified requirements shall be identified on submittal.
- B. Mounting Details

Submit mounting details for each type of fixture including attachments to structure, anchors, rods, hickeyes, etc.
- C. Submission of Substitute Fixtures (fixtures other than specified herein or on the Fixture Schedule).
 - A. Submittals for substitute fixtures shall be the standard print catalog sheets from the manufacturers (CADD drawings and computer printouts are not acceptable).
 - B. Substitute fixture shall meet or exceed photometric quality of fixture designated on the schedule.

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- C. Substitute fixture shall meet or exceed the quality of the fixture designated on fixture schedule in construction, finishing, materials, reflector, louver, diffuser etc.
- D. Substitute fixture shall closely match the appearance, dimensions and features of the fixture designated.
- E. Submit one sample of each type of substitute fixture as requested, with one set of mounting hardware for approval.
- F. In order to ensure that the work is performed in an orderly and expeditious manner, the Contractor shall be permitted no more than three (3) submittals for substitution of each specific fixture type. Should the third submittal be rejected, then the Contractor shall be required to provide the fixture specified on the fixture schedule.
- G. Spare Parts.

1.03 FIXTURE PROTECTION

- A. The Contractor is required to protect fixtures from damage during installation and up to time of acceptance. Broken fixtures, glassware, plastics, lamps, etc. shall be replaced by the Contractor with new parts, without any additional until final acceptance.

1.04 SPARE PARTS

- A. Diffusers

Provide a spare diffuser for every twenty (20) of each type and size installed, but not less than one (1) of each.

- B. Screwdrivers

Provide one (1) screwdriver suitable for each type of vandal resistant screw installed on fixtures.

- C. Delivery

- 1. Spares shall be provided and delivered with an itemized list and a receipt taken, certifying that these spare parts have been delivered securely packed and received in acceptable condition.

PART 2 - PRODUCTS

2.01 GENERAL

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- A. Provide lighting fixtures as designated on the fixture schedule. Lighting fixtures of the fixture schedule are designated by types, manufacturers and catalog numbers. Substitute fixtures by approved manufacturers listed in these specifications will be approved, provided that all requirements are satisfied.
- B. The requirements specified herein are minimum requirements and shall be supplemented by any other requirements indicated on the fixture schedule. All fixtures, including those designated on the fixture schedule on the drawings by Catalog Numbers, or Catalog Numbers mentioned in the Specifications, shall nevertheless be specially modified to meet the requirements of these specifications.
- C. All fixtures and components shall be UL listed and meet NYC Electrical Code.

2.02 FIXTURE COMPONENTS

- A. Equip fixtures with:
 - 1. Ballasts (electronic) suitable for operation on 60 Hz circuit, voltage rating to suit branch circuit voltage.
 - 2. Diffusers
 - a. Unless otherwise noted, parabolic diffusers shall be fabricated from semi-specular iridescence free aluminum with precisely formed and rigidly assembled blades. Reflectors shall be die formed of 20-ga. cold rolled steel.
 - b. Lens type diffusers shall be 100% clear virgin acrylic. The over-all plastic thickness of the diffuser or lens shall be a minimum of 0.130" and shall be a "male" type pyramidal in shape; "female" types are not acceptable.
 - c. Diffusers shall be as manufactured by Diversified, KSH, or Holophane.
 - d. Diffusers shall be fastened in a regressed extruded aluminum envelope door frame of code gauge metal with positive latching and shall be secured to the fixture housing by two (2) safety chains with spring clips or approved equivalent means.
 - 4. Holders and Spun Work
 - a. All shells, canopies or other spun parts shall be not less than No. 20 gauge unless otherwise

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- specified with a reasonable tolerance allowed for finishing.
- b. All screw type globe holders shall be reinforced so that screws shall have a bearing of at least four full threads. Screws holding glassware and/or plastics shall have check nuts or equivalent.
 - c. Globe holders shall be not less than 6" in diameter unless otherwise specified. Screwless safety type globe holders are acceptable.
5. Wire guards
- a. Wire guards shall be provided where indicated on the Drawings, typically with a "G" next to the fixture.
 - b. Guards shall be made of #9 gauge minimum steel wire, fully welded at all points. Finish shall be bright zinc plate. Additional wire guard information may be shown on Drawing Details and Notes.
 - c. Guards for surface mounted fixtures shall be secured to ceiling/wall with hinge access.
6. Finishing collar and/or combination finishing collar/outlet box.
7. Provide end caps positively attached for individually mounted fluorescent fixtures and ends of continuous rows.
8. Lamps for all fixtures shall be as indicated on Drawing or in these Specifications.

2.03 FLUORESCENT FIXTURE

- A. Fluorescent fixture housing shall be constructed of sheet metal not less than No. 20 gauge. Fixture housing shall be electrically welded.
- B. Ballast covers may be 22 gauge.
- C. Diffusers shall be fastened in an extruded aluminum or 19 gauge flush steel door frame, and fasten to the fixture body by means of approved hinges or hinging device. When in closed position, hinged frame shall be held by captive thumbscrews. Two (2) chain retainers shall be provided attached to diffuser frame with spring clips.
- D. Self-threading or sheet metal screws and nuts will not be accepted. Fixture and/or parts, such as finishing plates

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and trims for recessed fixtures, shall not be installed until all plastering and painting has been completed.

- E. Fluorescent fixture finish shall be white powder coat post painted to provide a minimum of 90% reflectivity (including all internal and external components).
- F. Recess lay-in type fixtures shall be provided with four (4) factory-supplied, UL listed earthquake safety clips.
- G. Fluorescent fixtures shall be as indicated on fixture schedule, or approved equal as manufactured by approved manufacturers listed below in alphabetical order:

Cooper Lighting, Day Brite, General Electric, Guth, Hasco, Holophane, ICON, Legion, Lightolier, Lightron, Linear Lighting, Lumax, McGraw Edison, Lithonia, Mercury, National, NeoRay, Paramount, SPI, Vantage and Hubbell Lighting (Columbia Lighting), Day-O-Lite, Peerless Lighting.
- H. Fixtures by these manufacturers must conform to all applicable paragraphs in these specifications.

PART 3 - EXECUTION

3.01 FIXTURE INSTALLATION

A. General

- 1. The Contractor shall be responsible for the proper and safe mounting and support of all lighting fixtures. Installation shall meet all the requirements of the National Electrical Code. Provide all items of equipment (stems, hangers, rods, inserts, boxes, brackets, yokes, channels, frames, etc.) required to adequately and safely support each lighting fixture in a manner acceptable to the DCLA.
- 2. Provide a lighting fixture at each location shown on Drawings of the type indicated by symbol or other notation.
- 3. The Contractor shall examine the drawings and coordinate closely with the all General Construction trades on all work involved with each type of fixtures to be installed. Contractor shall verify all sizes, locations and conditions under which lighting fixtures are to be installed.
- 4. The Contractor is required to protect fixtures from damage during installation, up to time of acceptance by

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the DCLA. Any broken or marred fixtures, glassware, plastics, lamps, etc. shall be replaced by the Contractor at no additional cost.

5. A suitable outlet box shall be provided by the Contractor for each lighting fixture provided. The box shall be cast into concrete or supported using two double split type anchors when installed in concrete walls or ceiling.
6. Number of supports for fixtures shall be as specified in "Lighting Fixture Support Schedule" in Article 3.03.
7. A surface or pendant type fixture, regardless of its weight, shall not be mounted directly on the concealed or exposed ceiling spline of a lightweight, mechanical acoustical ceiling system. Such fixtures shall be supported from the building structure.

3.03 LIGHTING FIXTURE SUPPORT SCHEDULE

- A. Unless otherwise indicated on drawings, provide the following number of supports for fixtures.
 1. An adequately supported outlet box with fixture stud may be utilized as one point of support for surface or recess fixtures weighing less than 40 lbsl.
- B. Ceiling Mounted Fixtures (Surface Mounted, Pendant Mounted or Recessed Mounted)
 1. Ceiling Mounted Fluorescent Fixtures:
 - a. Support individual fluorescent fixtures 2 feet or wider at 4 corners.

3.04 WIRING AND CONNECTIONS

- A. Each fixture shall be completely wired in approved standard trade practices in accordance with the requirements of the Electrical Code of the City of New York.
- B. Wires within fluorescent fixtures, wiring between the ceiling outlet box and the fixture, and all wiring between fixtures in a continuous row shall be #14 AWG minimum, insulated for 1,000 volts, and rated at 90°C minimum. Wiring shall be approved by the Advisory Board for fluorescent fixture wire and meet the above requirements.
- C. Wiring to pendant fixtures shall be run through the stem and iron bushing or straight cord and stainless steel wire.

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3.05 CLEANING

- A. All lighting fixtures, both interior and exterior shall be cleaned prior to final acceptance, for the removal of all construction debris, dust, fingerprints, exposed labels. Fixtures and or parts which have been damaged, scratched, chipped or inadvertently painted during construction shall be repaired and/or replaced.

END OF SECTION

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SECTION 265192
LAMPS, BALLASTS AND ACCESSORIES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide lamps, ballasts and accessories as specified herein and as indicated on Drawings. All lamps and ballasts and their installation shall comply with the NY State Energy Conservation Construction Code - Effective 07/03/2002. All installations & equipment shall comply with NYC Electrical Code.
- B. All fluorescent lamps shall be low mercury (green-end-cap) type compliant with US EPA Toxicity Characteristic Leaching Procedure (TCLP).
- C. Lamp type, wattage, CRI and color temperature shall be in compliance with this specification and as indicated on the drawings
- D. Fixtures shall be high efficiency fluorescent or LED type. In general, fluorescent lamps shall be super T-8 low mercury triphosphorous type with electronic ballasts suited for the application. LED lamps shall be used in lieu of existing halogen or incandescent for track lights.

1.02 LAMPS, GENERALLY

- A. Fluorescent, and LED lamps for all fixtures shall be provided by the Contractor. Quantity of lamps shall be as indicated on Drawings, or as required by the fixture installation.
- B. In general all interior lighting fixtures shall be equipped with T8 or super T8 lamps with tri-phosphor coating and low mercury content.
- C. Lamps shall be the standard product of General Electric Lamp Co., Osram/Sylvania Electric Co., and Philips Co.
- D. All fluorescent fixtures and shall be furnished with solid state energy saver type ballasts. Ballast for fluorescent lamps shall be suitable for one, two, three and four lamp configurations, as necessary, but shall not serve other non-ballasted fixtures unless indicated on the Drawings.
- E. Linear T5 Fluorescent lamps may be used with written permission.

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1.03 SPARES

A. In addition to those installed in fixtures, the Contractor shall provide spare lamps in original cartons, packaged and labeled and delivered to the Commissioner representative as follows:

1. Provide 2 spare LED and one (1) box of Fluorescent lamps

1.04 SUPPLEMENTAL SUBMITTALS

- A. Submit samples as requested by the Authority.
- B. Spares.

PART 2 - PRODUCTS

2.01 FLUORESCENT LAMPS

- A. Fluorescent lamps shall have a luminous efficacy of no less than 90 lm/W, CRI (Color Rendering Index) of no less than 80 and color temperature of 3500K.
- B. Linear fluorescent lamps shall be F32T8/835 and F25T8/835 medium bi-pin base with 20,000 hours lamp life
- C. Compact Fluorescent lamps shall be twin, quad or **triple** tube type with 4-pin base suitable for operation on electronic ballast circuit. The minimum lamp life shall be 20, 000 hours for long biaxial lamps and 10, 000 hours for short lamps.
- D. Biaxial lamps shall be equipped with the end of life extinguishing technology.
- E. Linear T5 Fluorescent lamps may be used with written permission from the Authority

2.02 LED

- A. Unless otherwise specified on the Drawings, LED lamps shall be 120VAC, medium Edison screw socket, PAR30, minimal lamp life of 30000 hours, reflector type.

2.03 FLUORESCENT BALLASTS

- A. Unless otherwise noted on the Drawings, fluorescent ballasts shall be type "A" sound rated, high frequency electronic type with .88 BF (Ballast Factor) normal light output, high power factor of .95 or greater and less than 10% total harmonic distortion.

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- B. Ballasts shall be installed by the fixture manufactures in accordance with NEMA and NEC requirements. All ballasts shall be UL listed.
- C. Electronic ballasts shall be by Advance, Universal Lighting Technologies, Osram/Sylvania and shall be warranted for five years including cost of labor for ballast replacement.
- D. Ballasts shall operate lamps on a parallel circuit and allow remaining lamps to maintain full output if companion lamp fails. Ballasts shall not be affected by lamp failure and shall not affect normal lamp life.
- E. Ballasts used in circuits controlled by the occupancy sensors and daylight harvesting switching shall be program start.
- F. Instant start ballasts are allowed for circuits, which are intended to be, switched no more than ones per day.
- G. Ballast shall meet the requirements of Federal Communications Commission Part 18 for Electromagnetic interference and RFI, Non Consumer Equipment.
- H. Dimming ballasts shall be suitable for operation with specified dimming equipment. Do not energize until lamps are in place.
- I. Ballasts shall be internally protected from line transients defined in defined in ANSI C62.41-1991 location A2.
- J. Ballasts potting compound shall contain no PCB.
- K. T5 and Compact fluorescent ballasts shall incorporate auto resetting end of life circuit interruption cut off.
- L. Ballasts for control of lamps in one housing or fixture unit shall not control lamps of an adjoining unit, (except where specified or for continuous cove lighting and only if the unit with the ballast is properly identified. This requirement shall apply to all fluorescent fixtures unless otherwise indicated on the Drawings or in the Specifications for purposes of multiple switching and control).
- M. In three-lamp fixtures three-lamp ballast shall be provided. Where three lamp fixtures are split wired (wired to two switches), the center lamp (and its one-lamp ballast) (of each fixture to a circuit) shall be

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wired to the same circuit, unless connected to the emergency circuit.

2.05 EMERGENCY LIGHTING BALLAST

- A. Emergency ballast shall be New York City approved and comply with U.L.924 for installation on the top of the fixture (Internal Type) or remotely (External Type).
- B. Input power rating shall not exceed 8 watts at 120 volt. Inverter circuit shall be solid state design of the ferroresonant type. Charger shall be fully automatic by solid state constant potential type and shall be temperature compensated to assure optimum battery life.
- C. Upon failure of normal AC power, an automatic relay circuit shall instantly apply battery power to the inverter circuit to operate one or two lamps for 90 minutes. The unit shall be provided with solid state circuitry to allow for normal switching of fixture to OFF position. Normal OFF switching solid state circuitry shall permit the unit to differentiate between normal OFF switching and loss of normal AC power without activating the emergency battery.
- D. The unit shall consist of the following items:
 - 1. Battery: 24 volt, Field-replaceable Nickel-Cadmium type.
 - 2. Charger: Fully automatic, solid state, constant-current type with sealed power transfer relay.
 - 3. Test Push Button and Indicator Light: Visible and accessible without opening fixture or entering ceiling space.
 - 4. Emergency Connection: Operate one fluorescent lamp continuously. Connect unswitched circuit to battery-inverter unit and switched circuit to fixture ballast.
 - 5. Diagnostic LED panel shall include the following functions: battery charge/failure, lamp failure, and circuit transfer failure.
 - 6. A double-pole momentary test switch.
 - 7. Housing: Housing to be white powder coated. Heavy duty 18 gauge steel case.
- E. Approved manufacturer: Bodine B30ST or approved equal.

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PART 3 - EXECUTION

3.01 INSTALLATION

- A. Provide the precise complement of lamps in every indoor lighting fixture provided under the Contract.
- B. Install lamps in accordance with manufacturer's instructions.
- C. Provide electronic ballasts of compatible design to lamps required.
- D. Ballast shall be screwed to fixture body and be provided with quick disconnects on wiring to allow for ease of replacement.
- E. Install LED lamps in existing track lighting.

END OF SECTION

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SECTION 28 31 01
FIRE DETECTION AND ALARM SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The requirements of the Contract Documents, including the General Conditions and Division 1 - General Requirements shall apply to the work of this section.
- B. The entire system shall be installed with aesthetics in mind. All control panels and remote annunciators installed in public spaces shall be semi-flush mounted with no exposed conduit or cable trays.

1.02 WORK INCLUDED

- A. The work covered by this Section of the Specification shall include all labor, equipment, materials and services to upgrade the existing Fire alarm system with capacity for the new smoke detection devices required by the HVAC upgrade and by the new elevator installation. It shall be complete with all necessary hardware, software and memory specifically tailored for this installation. It shall be possible to permanently modify the software on site by using a plug-in programmer. The system shall consist of, where applicable, but not be limited to, the following:
 - 1. Addressable analog duct smoke detectors.
 - 2. Sprinkler supervisory switches and tamper switch supervision.

1.03 APPLICABLE CODES AND STANDARDS

- A. All equipment shall be UL listed for its intended use and conform to the latest UL Standards.
- B. Underwriters Laboratories Inc.: The system and all components shall be listed by Underwriters Laboratories Inc. for use in fire protective signaling system under the following standards as applicable:

UL 864/UOJZ, APOU Control Units for Fire Protective Signaling Systems.

UL 268 Smoke Detectors for Fire Protective Signaling Systems.

UL 268A Smoke Detectors for Duct Applications.

UL 217 Smoke Detectors Single Station.

- C. This installation shall comply with:
 - 1. Americans with Disabilities Act (ADA)

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2. National Electric Code, Article 760 with NYC Amendments.
3. National Fire Protection Association Standards: NFPA72
4. Local and State Building Codes and the Local Authorities Having Jurisdiction.
5. International Standards Organization (ISO): ISO-9001
6. The latest provisions of and amendments to Local Law No. 5, Local Law No. 16 and Local Law No. 58 of the City of New York.
7. Utilize OTCR / MEA / BSA Approved Fire Alarm Equipment
8. The requirements of the City of New York Building Department and the City of New York Fire Department.

1.04 RELATED DOCUMENTS

- A. Secure permits and approvals prior to installation.
- B. Prior to commencement and after completion of work notify Commissioner.
- C. Submit letter of approval for installation before requesting acceptance of system.

1.05 RELATED WORK

- A. The Contractor shall coordinate work in this Section with all related trades. Work and/or equipment provided in other Sections and related to the fire alarm system shall include, but not be limited to:
 1. Sprinkler waterflow and supervisory switches. Modification of sprinkler devices to accommodate monitoring by the new fire alarm system. Duct smoke detectors. The Contractor shall furnish necessary duct opening to install the duct smoke detectors.
 2. New air handling control circuits and status contacts.
 3. Elevator recall control circuits. The operation of the elevators shall be in accordance with applicable codes.
 4. Raceways, Fittings, supporting Devices, Boxes and Accessories: Section 260533.
 5. Wiring Systems: Section 260522.

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1.06 SUBMITTALS

- A. Provide list of all types of equipment and components provided. This shall be incorporated as part of a Table of Contents, which will also indicate the manufacturer's part number, the description of the part, and the part number of the manufacturer's product datasheet on which the information can be found.
- B. Provide description of operation of the system (Sequence of Operation), similar to that provided in Part 2 of this Section of the Specifications, to include any and all exceptions, variances or substitutions listed. Any such exceptions, variances or substitutions that were not listed and are identified in the submittal, shall be grounds for immediate disapproval without comment. The sequence of operation shall be project specific, and shall provide individual sequences for every type of alarm, supervisory, or trouble condition that may occur as part of normal or off-normal system use.
- C. Provide manufacturer's ORIGINAL printed product data, catalog cuts and description of any special installation procedures. Photocopied and/or illegible product data sheets shall not be acceptable. All product datasheets shall be highlighted or stamped with arrows to indicate the specific components being submitted for approval.
- D. Provide manufacturer's installation instruction manual for specified system.
- E. Provide samples of various items when requested.
- F. Provide copy of NYS License to perform such work.
- G. Provide copies of NICET Level II Fire Alarm certifications for the two (2) technicians assigned to this project.
- H. Provide shop drawings as follows:
 1. Coversheet with project name, address and drawing index.
 2. General notes drawing with peripheral device backbox size information, part numbers, device mounting height information, and the names, addresses, point of contact, and telephone numbers of all contract project team members.
 3. Device riser diagram that individually depicts all control panels, annunciators, addressable devices, and notification appliances. Shall include a specific, proposed point descriptor above each addressable device. Shall include a specific, discrete point address that

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shall correspond to addresses depicted on the device layout floor plans. Drawing shall provide wire specifications, and wire tags shown on all conductors depicted on the riser diagram. All circuits shall have designations that shall correspond with those require on the control panel and floor plan drawings. End-of-line resistors (and values) shall be depicted.

4. Control panel termination drawing(s). Drawing shall provide a detail indicating where conduit penetrations shall be made, so as to avoid conflicts with internally mounted components and or batteries. No penetration or conduit entrance shall be made on the top of any fire alarm enclosure. For each additional data gathering panel, a separate control panel drawing shall be provided, which clearly indicated the designation, service and location of the control enclosure. End-of-line resistors (and values) shall be depicted.
5. Device typical wiring diagram drawing(s) shall be provided which depict all system components, and their respective field wiring termination points. Wire type, gauge, and jacket shall also be indicated. When an addressable module is used in multiple configurations for monitoring or controlling various types of equipment, different device typical diagrams shall be provided. End-of-line resistors (and values) shall be depicted.
6. Device layout floor plans shall be created for every area served by the fire alarm system. CAD Files (AutoCAD - latest edition) shall be provided by the Commissioner for the use of the fire alarm system equipment vendor in the preparation of the floor plans. Floor plans shall indicate accurate locations for all control and peripheral devices. Drawings shall be NO LESS THAN 1/8 INCH SCALE. All addressable devices shall be depicted with a discrete address which corresponds with that indicated on the Riser Diagram. All notification appliances shall also be provided with a circuit address which corresponds to that depicted on the Riser Diagram. If individual floors need to be segmented to accommodate the 1/8" scale requirements, KEY PLANS and BREAK-LINES shall be provided on the plans in an orderly and professional manner. End-of-line resistors (and values) shall be depicted.
- I. Battery calculations shall be provided on a per power supply/charger basis based on applicable code requirements. These calculations shall clearly indicate the quantity of devices, the device part numbers, the supervisory current draw, the alarm current draw, totals for all categories, and the calculated battery requirements. Battery calculations

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shall also reflect all control panel component, remote annunciator, and auxiliary relay current draws. Failure to provide these calculations shall be grounds for the complete rejection of the submittal package.

1.07 WARRANTY

A. All work performed and all material and equipment furnished under the contract shall be free from defects and shall remain so for a period of at least one (1) year from the date of acceptance or approval by Commissioner. The full cost of maintenance, labor and materials required to correct any defect during this one year period shall be included.

PART II - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. All new components to be compatible with the existing FCI 7200 FACP.
- B. Final determination of compliance with these Specifications shall rest with the Engineer, who, at his discretion, may require proof of performance.
- C. Product submissions made without proof of no less than three (3) factory authorized and certified manufacturer's distributors residing within 50 miles of the project job site shall be rejected. These distributors must not only provide installation support, but must have a service organization capable of 24 hour emergency call service.
- D. All products used shall be of a single manufacturer. Submission of notification appliances, auxiliary relays, or documentation from other than a single manufacturer shall not be acceptable and will be grounds for immediate disapproval without comment.

2.02 CIRCUITING GUIDELINES

- A. Each addressable analog loop shall be circuited so device loading is not to exceed 80% of loop capacity in order to leave for space for future devices. The loop shall have Class B operation.
- B. Where it is necessary to interface conventional initiating devices provide intelligent input modules to supervise Class B zone wiring.
- C. Each of the following types of devices or equipment shall be provided with supervised circuits as shown on the drawings but shall be typically as follows:

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1. Sprinkler Valve Supervisory Switches: Provide one (1) supervisory module circuit for each sprinkler valve supervisory switch.
 2. When waterflow and tamper switches exist at the same location, provide one (1) dual input addressable module. When odd numbers of devices exist at a single location, provide additional single input addressable modules.
- D. Alarm: The FACP central processing unit (CPU) shall provide a general alarm Temporal 3-code operation.
- E. Each of the following types of alarm notification appliances shall be circuited as shown on the drawings but shall be typically as follows:
1. Audible Signals: Provide sufficient spare capacity to assure that the addition of five (5) audible devices can be supported without the need for addition control components (power supplies, signal circuit modules, amplifiers, batteries, etc.)
 2. Visual Signals Provide sufficient spare capacity to assure that the addition of three (3) visual devices can be supported without the need for addition control components (power supplies, signal circuit modules, batteries, etc.)
- F. Each of the following types of remote equipment associated with the fire alarm system shall be provided with a form 'C' control relay contact as shown on the drawings, but shall be typically as follows:
1. HVAC Fan Systems: Provide one (1) shutdown control relay contact for each HVAC fan system.
 2. HVAC Supply Fans: Provide one (1) shutdown control relay contact for each HVAC supply fan.
 3. HVAC Return Fans: Provide one (1) shutdown control relay contact for each HVAC return fan.
- G. Provide a dedicated 24VDC circuit to feed all auxiliary relays required for inductive loads. Circuits shall be supervised via an end-of-line relay and addressable input module. Auxiliary relays shall not derive their power from the starter or load being controlled.

2.03 FIRE ALARM SYSTEM SEQUENCE OF OPERATION

- A. Operation of any area smoke detect/sensor, duct smoke detect/sensor, shall automatically

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1. Update the control/display as described above (A.1.)
2. Sound a pulsing audible signal and flash the general alarm LED indicator at the FACP. Pressing the alarm acknowledge key on the FACP shall silence the audible signal and continuously light the LED, during the alarm condition. Subsequent alarm conditions shall resound the audible signal and again flash the LED. Each alarm condition must be individually acknowledged.
3. Display a general alarm indication and system status summary (numbers of alarm, supervisory and/or trouble conditions) on the FACP alphanumeric, liquid crystal display (LCD). The LCD Display shall automatically display the device/circuit type and the custom 42-character message without any operator intervention.
4. Enter the custom label for the device or circuit reporting the alarm condition with the time and date of alarm activation into the FACP historical alarm log for future recall/review.
5. Sound an audible signal at the remote annunciator panel. The audible signal may be silenced during the alarm condition. Subsequent alarm conditions shall resound the audible signal.
6. Visually annunciate the alarm-initiating device via an individual or "group" alarm indicator.
7. Display a general alarm indication and system status summary (numbers of alarm, supervisory and /or trouble conditions) on the remote annunciator panels(s) alphanumeric, liquid crystal display (LED). The LCD shall automatically display the device type and custom 42-character display without operator intervention.
8. Sound the appropriate Temporal 3 alarm code on all horns throughout the building. Activation of a smoke or heat detector shall also continuously sound the smoke/heat alarm bell at the FACP. The smoke/heat alarm bells may be silenced by operation of the FACP signal silence switch.
9. Flash all alarm strobe lights throughout the building. The alarm strobe lights may be turned off during the alarm condition by operation of the FACP alarm silence switch. Subsequent alarm conditions shall again turn on the alarm strobe lights. The alarm strobe lights shall be inhibited from being turned off for a period of one/three/five (1/3/5) minutes after commencing operation.

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10. Each alarm strobe light circuit shall be provided with a synchronized flash module, at the FACP, so that all alarm strobe lights connected to any single alarm strobe light circuit shall flash at the same time at a rate of one (1) flash per second.
 11. Flash all alarm strobe lights. Subsequent alarm condition shall again turn on the alarm strobe lights. The alarm strobe lights shall be inhibited from being turned off for a period of five (5) minutes after commencing operation.
 12. Operate control relay contacts to shutdown all air handling systems that serve the building and close any smoke dampers related to those systems. Air handling systems shall not be permitted to restart to normal operation from the simple operation of the system reset switch. A separate air handling systems restart switch shall be provided on the FACP to permit air handling systems to be restarted after the fire alarm system has been reset to normal.
 13. Operate control relay contact to initiate the transmission of an alarm indication by type of alarm condition (manual alarm, or smoke/heat alarm) to a central station agency via telephone lines. Selection of a central station agency, its equipment, its fees and fees for telephone line usage are the responsibility of the City of New York.
- B. Elevator smoke and heat detector sequences shall comply with the applicable code requirements for floor recalls and shunt trip (if allowed).
- C. Activation of a sprinkler supervisory initiating device shall:
1. Update the control/display as described above (A.1.)
 2. Transmit a supervisory condition, via the integral central station communicator, to central station/Local Fire.
 3. Visually annunciate the individual point of alarm on all remote annunciator panels. The visual indication shall remain on until the alarm condition is reset to normal.

2.04 COMPONENTS

A. Intelligent Devices-General

Each remote device shall have a microprocessor with non-volatile memory to support its functionality and

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serviceability. Each device shall store as required for its functionality the following data: device serial number, device address, device type, personality code, date of manufacture, hours in use, time and date of last alarm, amount of environmental compensation left/used, last maintenance date, job/project number, current detector sensitivity values, diagnostic information (trouble codes) and algorithms required to process sensor data and perform communications with the loop controller.

Each device shall be capable of electronic addressing, either automatically or application programmed assigned, to support physical/electrical mapping and supervision by location. Setting a device's address by physical means shall not be necessary.

B. Intelligent Detectors - General

The System Intelligent Detectors shall be capable of full digital communications using both broadcast and polling protocol. Each detector shall be capable of performing independent fire detection algorithms. The fire detection algorithm shall measure sensor signal dimensions, time patterns and combine different fire parameters to increase reliability and distinguish real fire conditions from unwanted deceptive nuisance alarms. Signal patterns that are not typical of fires shall be eliminated by digital filters. Devices not capable of combining different fire parameters or employing digital filters shall not be acceptable.

Each detector shall have an integral microprocessor capable of making alarm decisions based on fire parameter information stored in the detector head. Distributed intelligence shall improve response time by decreasing the data flow between detector and analog loop controller. Detectors not capable of making independent alarm decisions shall not be acceptable. Maximum total analog loop response time for detectors changing state shall be 0.5 seconds.

Each detector shall have a separate means of displaying communication and alarm status. A green LED shall flash to confirm communication with the analog loop controller. A red LED shall flash to display alarm status.

The detector shall be capable of identifying up to 32 diagnostic codes. This information shall be available for system maintenance. The diagnostic code shall be stored at the detector.

Each smoke detector shall be capable of transmitting pre-alarm and alarm signals in addition to the normal, trouble and need cleaning information. It shall be possible to program control panel activity to each level. Each smoke detector may be individually programmed to operate at any one of five (5) sensitivity settings.

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Each detector microprocessor shall contain an environmental compensation algorithm which identifies and sets ambient "Environmental Thresholds" approximately six times an hour. The microprocessor shall continually monitor the environmental impact of temperature, humidity, other contaminants as well as detector aging. The process shall employ digital compensation to adapt the detector to both 24 hour long term and 4 hour short term environmental changes. The microprocessor shall monitor the environmental compensation value and alert the system operator when the detector approaches 80% and 100% of the allowable environmental compensation value. Differential sensing algorithms shall maintain a constant differential between selected detector sensitivity and the "learned" base line sensitivity. The base line sensitivity information shall be updated and permanently stored at the detector approximately once every hour.

The intelligent analog detectors shall be suitable for mounting on any Signature Series detector mounting base.

The Fire alarm system shall have the ability to set elevator lobby Ionization or Multi Sensing smoke detectors for alarm verification. Detector in the alarm verification mode shall indicate, by point in a text format at the main control and at the remote LCD annunciators.

C. Ionization Smoke Detector,

Provide intelligent ionization smoke detectors. The analog ionization detector shall utilize a unipolar ionization smoke sensor to sense changes in air samples from its surroundings. The integral microprocessor shall dynamically examine values from the sensor and initiate an alarm based on the analysis of data. Systems using central intelligence for alarm decisions shall not be acceptable. The detector shall continually monitor any changes in sensitivity due to the environmental affects of dirt, smoke, temperature, aging and humidity. The information shall be stored in the integral processor and transferred to the analog loop controller for retrieval using a laptop PC or the SIGA-PRO Signature Program/Service Tool. The ion detector shall be rated for ceiling installation at a minimum of 30 ft (9.1m) centers and be suitable for wall mount applications. The ion smoke detector shall be rated for operation in constant air velocities from 0 to 75 ft/min. (0-0.38 m/sec) and with intermittent air gusts up to 300 ft/min. (1.52m/sec) for up to 1 hour.

The percent smoke obscuration per foot alarm set point shall be field selectable to any of five sensitivity settings ranging from 0.7% to 1.6%. The ion detector shall be suitable for operation in the following environment:

- Temperature: 32°F to 120°F (0°C to 49°C)

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- Humidity: 0-93% RH, non-condensing
- Elevation: Up to 6,000 ft. (1828 m)

D. Photoelectric Smoke Detector

Provide intelligent photoelectric smoke detectors. The analog photoelectric detector shall utilize a light scattering type photoelectric smoke sensor to sense changes in air samples from its surroundings. The integral microprocessor shall dynamically examine values from the sensor and initiate an alarm based on the analysis of data. Systems using central intelligence for alarm decisions shall not be acceptable. The detector shall continually monitor any changes in sensitivity due to the environmental affects of dirt, smoke, temperature, aging and humidity. The information shall be stored in the integral processor and transferred to the analog loop controller for retrieval using a laptop PC or the SIGA-PRO Signature Program/Service Tool. The photo detector shall be rated for ceiling installation at a minimum of 30 ft (9.1m) centers and be suitable for wall mount applications. The photoelectric smoke detector shall be suitable for direct insertion into air ducts up to 3 ft (0.91m) high and 3 ft (0.91m) wide with air velocities up to 5,000 ft/min. (0-25.39 m/sec) without requiring specific duct detector housings or supply tubes.

The percent smoke obscuration per foot alarm set point shall be field selectable to any of five sensitivity settings ranging from 1.0% to 3.5%. The photo detector shall be suitable for operation in the following environment:

- Temperature: 32°F to 120°F (0°C to 49°C)
- Humidity: 0-93% RH, non-condensing
- Elevation: no limit

E. Standard Detector Mounting Bases

Provide standard detector mounting bases suitable for mounting on North American 1-gang, 3½" or 4" octagon box and 4" square box. The base shall, contain no electronics, support all Signature Series detector types and have the following minimum requirements:

- Removal of the respective detector shall not affect communications with other detectors.
- Terminal connections shall be made on the room side of the base. Bases which must be removed to gain access to the terminals shall not be acceptable.
- The base shall be capable of supporting one (1) Signature Series SIGA-LED Remote Alarm LED Indicator. Provide remote LED alarm indicators where shown on the plans.

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F. Duct Detector

Provide Low profile intelligent addressable DUCT smoke detector as indicated on the project plans. Provide for variations in duct air velocity between 100 and 4,000 feet per minute and include a wide sensitivity range of .79 to 2.46%/ft. Obscuration. Include one Form-C shut down relay rated 2.0 amps @ 30 Vdc and also include slave high contact relays if required. Provide an air exhaust tube and an air sampling inlet tube that extends into the duct air stream up to ten feet. The addressable DUCT housing shall be suitable for extreme environments, including a temperature range of -20 to 158 degrees F (-29 to 70 degrees Celsius) and offer a harsh environment gasket option. Provide Remote Alarm LED Indicators SIGA-LED and/or remote test station model SD-TRK as indicated on the project plans.

G. Intelligent Modules-General

It shall be possible to address each Intelligent Signature Series module without the use of DIP or rotary switches. Devices using DIP switches for addressing shall not be acceptable. The personality of multifunction modules shall be programmable at site to suit conditions and may be changed at any time using a personality code downloaded from the Analog Loop Controller. Modules requiring EPROM, PROM, ROM changes or DIP switch and/or jumper changes shall not be acceptable. The modules shall have a minimum of 2 diagnostic LEDs mounted behind a finished cover plate. A green LED shall flash to confirm communication with the loop controller. A red LED shall flash to display alarm status. The module shall be capable of storing up to 24 diagnostic codes which can be retrieved for troubleshooting assistance. Input and output circuit wiring shall be supervised for open and ground faults. The module shall be suitable for operation in the following environment:

- Temperature: 32°F to 120°F (0°C to 49°C)
- Humidity: 0-93% RH, non-condensing

H. Dual Input Module

Provide intelligent dual input modules. The Dual Input Module shall provide two (2) supervised Class B input circuits each capable of a minimum of 4 personalities, each with a distinct operation. The module shall be suitable for mounting on North American 2 ½" (64mm) deep 1-gang boxes and 1 ½" (38mm) deep 4" square boxes with 1-gang covers. The dual input module shall support the following circuit types:

- Normally-Open Alarm Latching (Manual Stations, Heat Detectors, etc.)
- Normally-Open Alarm Delayed Latching (Waterflow Switches)

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- Normally-Open Active Non-Latching (Monitor, Fans, Dampers, Doors, etc.)
- Normally-Open Active Latching (Supervisory, Tamper Switches)

I. Waterflow/Tamper Module: Provide intelligent waterflow/tamper modules. The Waterflow/Tamper Module shall be factory set to support two (2) supervised Class B input circuits. Channel A shall support a Normally-Open Alarm Delayed Latching Waterflow Switch circuit. Channel B shall support a Normally-Open Active Latching Tamper Switch. The waterflow/tamper module shall be suitable for mounting on North American 2 1/2" (64mm) deep 1-gang boxes and 1 1/2" (38mm) deep 4" square boxes with 1-gang covers.

J. Control Relay Module, SIGA-CR

Provide intelligent control relay modules. The Control Relay Module shall provide one form "R" dry relay contact rated at 2 amps @ 24 Vdc to control external appliances or equipment shutdown. The control relay shall be rated for pilot duty and releasing systems. The position of the relay contact shall be confirmed by the system firmware. The control relay module shall be suitable for mounting on North American 2 1/2" (64mm) deep 1-gang boxes and 1 1/2" (38mm) deep 4" square boxes with 1-gang covers.

K. Remote Relays

Multi-Voltage Control Relays

Provide remote control relays connected to supervised ancillary circuits for control of fans, etc. Relay contact ratings shall be SPDT and rated for 10 amperes at 115 Vac. A single relay may be energized from a voltage source of 24 Vdc, 24 Vac, 115 Vac, or 230 Vac. A red LED shall indicate the relay is energized. A metal enclosure shall be provided.

L. Multi-Voltage Control Relays

Provide remote control relays connected to supervised ancillary circuits for control of fans, etc. Relay contact ratings shall be DPDT and rated for 10 amperes at 115 Vac. A single relay may be energized from a voltage source of 24 Vdc, 24 Vac, 115 Vac, or 230 Vac. A red LED shall indicate the relay is energized. A metal enclosure shall be provided.

PART III - EXECUTION

3.01 INSTALLATION

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- A. The entire system shall be installed in a workmanlike manner, in accordance with approved manufacturer's wiring diagram. The contractor shall furnish all conduit, wiring, outlet boxes, junction boxes, cabinets and similar devices necessary for the complete installation. All wiring shall be of the type recommended by the manufacturer, approved by the local Fire Department, NYC code, and specified with in. All conduit and wire shall meet the requirements of applicable code.
- B. All penetration of floor slabs and firewalls shall be sleeved (1" conduit minimum) fire stopped in accordance with all local fire codes.
- C. End of Line Resistors shall be furnished as required for mounting as directed by the manufacturer. Devices containing end-of-line resistors shall be appropriately labeled. Devices should be labeled so removal of the device is not required to identify the EOL device.
- D. All mechanical rooms, boiler rooms, wiring closets, custodian rooms, attic spaces, etc. or areas with no hung ceilings shall be piped with 3/4" conduit and installed as necessary by NYC Code. All areas in public view shall be in metal conduit. All boxes must be painted red and labeled "INTERIOR FIRE ALARM".
- E. All addressable modules shall be mounted within 36 inches of the monitored or controlled point of termination. This shall include, but is not necessarily limited to, fan shutdown, elevator recall, shunt trip, sprinkler status points, or door release. Label all addressable modules as to their function.
- F. All low voltage wiring terminated to the fire alarm system shall be PLENUM RATED with no exceptions and no less than No. 12 AWG in size for NAC circuits and 14 AWG for Initiating Circuits, and solid copper per applicable codes. Exposed wire above 8ft AFF shall be 150 degrees C and as specified in NYC code.
- G. All line voltage (120VAC) wiring shall be no less than No. 12 AWG in size, and solid copper. This shall include all system grounding. FACP must have a DEDICATED fused disconnect switch and fused cut out, if required, arranged per NYC code. Fused cut out shall be utilized if additional circuits are required that cannot be accommodated by a single fused disconnect switch.
- H. All wiring shall be color-coded throughout, to National Electrical Code standards and NYC codes.
- I. Power-limited/Non-power-limited NEC wiring standards SHALL BE OBSERVED.
- J. All junction box covers shall be painted red and labeled INTERIOR FIRE ALARM SYSTEM.

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- K. Fire alarm system wiring shall not co-mingle with any other system wiring in the facility. Conduits shall not be shared under any circumstance. Only when fire alarm wiring enters the enclosure of a monitored or controlled system will co-habitation be permitted (i.e. at fan starters or elevator controllers). THIS WILL BE FIELD INSPECTED BY THE PROJECT COMMISSIONER.
- L. Auxiliary relays shall be appropriately labeled to indicate "FIRE ALARM SYSTEM" and their specific function (i.e. FAN S-1 SHUTDOWN).
- M. All fire alarm wiring shall be continuous and unspliced. Terminations shall only occur at fire alarm devices or control panel enclosures under terminal screws. All other splicing methods are specifically disallowed (i.e. plastic wirenuts).
- N. All fire alarm wiring shall be installed using a dedicated system of supports (i.e. bridle rings). Fire alarm wiring shall not be bundled or strapped to existing conduit, pipe or wire in the facility. THIS WILL BE FIELD INSPECTED BY THE COMMISSIONER.
- O. All fire alarm wiring shall be sleeved when passing through any wall, using conduit sleeves (1" min.) with bushings, and fire stopped in accordance with Code.
- P. All fire alarm devices shall be accessible for periodic maintenance. Should a device location indicated on the Contract Drawings not meet this requirement, it shall be the responsibility of the contractor to bring it, in writing, to the attention of the Commissioner.

3.02 FIELD QUALITY CONTROL

- A. The system shall be installed and fully tested under the supervision of a trained manufacturer's representative. The system shall be demonstrated to perform all of the function as specified.
- B. The contractor or fire alarm equipment vendor shall have no less than two (2) NICET Level II fire alarm technicians dedicated to this project.
- C. The Contractor and the Fire Alarm System Vendor shall, upon the request of the Commissioner or End-User, attend any and all project meetings for the purpose of accurately determining progress.
- D. It shall be the responsibility of the contractor to assure that construction debris does not adversely affect any sensing devices installed as part of this project. Should it be deemed necessary by the Commissioner, End-User or

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AHJ, the contractor shall be responsible for the cleaning of all smoke detectors prior to final acceptance.

3.03 TESTS

- A. The fire alarm system vendor shall test the system in accordance with the manufacturer's requirements and NFPA 72 as amended by the NYC Building Code. The vendor shall provide completed reports to the Commissioner for review and approval prior to final acceptance.
- B. Each individual system operation on a circuit-by-circuit basis shall be tested for its complete operation. The procedure for testing the entire fire alarm system shall be set forth with the consent of the code enforcement official, the Engineer and the manufacturer.

3.04 DOCUMENTATION AND DEMONSTRATION

- A. The contractor shall compile and provide to the owners three (3) complete manual on the completed system to include SITE SPECIFIC operating and maintenance instruction, catalog cuts of all equipment and components, as-built wiring diagrams and a manufacturer's suggested spare parts list, and an end user training video on DVD disk.
- B. In addition to the above manuals, the Contractor shall provide the services of the manufacturer's trained representative for two (2) separate calendar days for a period of four (4) hours per day to instruct the owners' designated personnel on the operation and maintenance of the entire system.
- C. As-built drawings shall consist of the following:
 - 1. Complete revision of all previously submitted drawings
 - 2. Point-to-point depiction of all device wiring on the device layout floor plans.
 - 3. One (1) set of B-size, laminated as-built drawings.
 - 4. Two (2) sets of 30"x42"inch 1\16"=1' scale drawings showing all points of fire alarm. One set shall be submitted with the close-out documents. Second set shall be mounted in frame with a lexan cover. These drawing must be submitted to Commissioner for approval.
- D. The Contractor shall provide City of New York hard and soft copies of Fire Alarm System's software & programming database upon final approval of NYC FD. The database provided shall be usable by any authorized and certified distributor of the product line, and shall include all applicable passwords necessary for total and unrestricted

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use and modification of the database. City of New York
(DCLA) SHALL RETAIN COMPLETE RIGHTS AND OWNERSHIP TO ALL
SOFTWARE RUNNING THE SYSTEM

GPI shall define the extent of hardcopy database
documentation to be provided.

END OF SECTION

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SECTION 310000
EARTHWORK

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. Cast-In-Place Concrete: Section 033000.

1.02 DEFINITIONS

- A. The following terms shall have the meanings ascribed to them in this Article, wherever they appear in this Section.
1. Earth Excavation: The removal of all surface and subsurface material not classified as rock (as defined below).
 2. Subgrade Surface: Surface upon which subbase or topsoil is placed.
 3. Foundation Bearing Grade: Grade/elevation at which the bottom-of-footings are constructed.
 4. Maximum Density: The dry unit weight in pounds per cubic foot of the soil at "Optimum Moisture Content" when determined by ASTM D 698 (Standard Proctor), or ASTM D 1557 (Modified Proctor).
 5. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
 6. Unauthorized Excavation: The removal of material below required elevation indicated on the Drawings or beyond lateral dimensions indicated or specified without specific written direction by the Commissioner.

1.03 SUBMITTALS

- A. Shop Drawings:
1. Underpinning: Submit shop drawings and associated calculations for underpinning. Shop drawings and calculations shall be signed and sealed by a New York State licensed professional engineer.
- B. Quality Control Submittals:
1. Excavation Procedure: Submit a lay out drawing or detailed outline of intended excavation procedure for the Commissioner's information. This submittal will not relieve the Contractor of

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responsibility for the successful performance of intended excavation methods.

2. Subbase Materials: Name and location of source and the DOT Source Number. If the material is not being taken from an approved DOT Source the results of the gradation and soundness tests performed by an ASTM certified soils laboratory will be required.
3. Other Aggregates: Name and location of source and soil laboratory test results.

1.04 PROJECT CONDITIONS

A. Cold Weather Requirements:

1. Excavation: When freezing temperatures are anticipated, do not excavate to final required elevations for concrete work unless concrete can be placed immediately.
2. Backfilling: If backfill is being placed during freezing temperatures the backfilling operations shall be monitored by the Commissioner and the following procedures shall be followed:
 - a. Frozen ground shall be removed in its entirety from beneath and five feet beyond the area of fill placement.
 - b. The fill material placed shall consist of Selected Fill and shall be free of all frozen chunks that exceed four inches in size. The material transported to the project site shall only consist of material excavated from below the frost depth.
 - c. At the end of the work day, the area of fill placement shall be covered with insulated blankets, or left unprotected. Other means of protection (hay, wood chips, etc.) may also be used for protection provided it is approved by the Commissioner.
 - d. Following work day, remove the insulated blankets and/or strip the area of all frozen material as specified previously.
 - e. Upon establishing the subgrade elevations, protect the grades with insulated blankets or place additional material that will adequately insulate the exposed earth surface from frost. This additional fill or protective material shall be stripped just prior to pouring concrete.

PART 2 - PRODUCTS

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2.01 MATERIALS

- A. Select Granular Material: Stockpiled, sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials. Comply with the gradation and material requirements specified below:

Sieve		Percent Passing
Sieve Size	Size opening (mm)	
2 inch	50.8	100
1/4 inch	6.35	30-65
No. 40	0.425	5-40
No. 200	0.075	0-10

1. Magnesium Sulfate Soundness Test: 20 percent maximum loss by weight after four test cycles.
2. Plasticity Index: The plasticity index of the material passing the No. 40 mesh sieve shall not exceed 5.0.
3. Elongated Particles: Not more than 30 percent, by weight, of the particles retained on a 1/2 inch sieve shall consist of flat or elongated particles. A flat or elongated particle is defined as one which has its greatest dimension more than three times its least dimension.

- B. Selected Fill: Sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials. Comply with the gradation requirements specified below:

Sieve		Percent Passing
Sieve Size	Size opening (mm)	
4 inch	101.6	100
No. 40	0.425	0-70
No. 200	0.075	0-15

- C. Marker Tape: FL Industries Blackburn/Holub's Type YT6, or Seton Nameplate Corporations Type 6 ELE, imprinted with message suited to item buried below.

PART 3 - EXECUTION

3.01 UNDERGROUND UTILITIES

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- A. Locate existing underground utilities prior to commencing excavation work. Determine exact utility locations by hand excavated test pits. Support and protect utilities to remain in place.
- B. Do not interrupt existing utilities that are in service until temporary or new utilities are installed and operational.
- C. Utilities to remain in service: Shall be re-routed as shown on the Contract Drawings.
- D. Utilities abandoned beneath and five feet laterally beyond the structure's proposed footprint shall be removed in their entirety. Excavations required for their removal shall be backfilled and compacted as specified herein.

3.02 UNDERPINNING

- A. General
 - 1. Inspect site, examine existing conditions and make all necessary preparations for the safe and proper sequence of work.
 - 2. Properly guard and protect excavations so as to prevent them from becoming dangerous to person or property.
 - 3. Brace, shore, and protect existing structures when excavations are made adjacent to the existing structures or within a distance that they will be affected by the excavation. Underpin adjacent structures when excavations are carried to a depth that will require it by the NYC Building Code or when indicated on Drawings.
 - 4. Provide materials for work in good serviceable order.
- B. Inspection and Code Requirements
 - 1. Underpinning for protection of excavations and protection of adjacent structures and the public is the responsibility of the Contractor and shall comply with the requirements of the 2008 NYC Building Code; Chapter 33, Section BC 3309 Protection of Adjoining Property.
 - 2. The most stringent requirements of the Building Code, Contract Drawings, Specifications, or any authorities having jurisdiction shall govern this Work.

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3. Coordinate Work of this Section with Work of all other Divisions so as to properly, and completely, install all Work as drawn or specified.
4. The Contractor shall engage the services of a Licensed Professional Engineer to prepare details of underpinning, and other construction required for protection of excavations and support of adjacent properties or buildings. These drawings shall be submitted to the Commissioner for general review, which does not relieve the Contractor's Engineer of responsibility for the adequacy of the design.
5. The Contractor's Engineer shall file Form PW-1 with the Building Department, thereby becoming the Engineer of Record for such protection work and is responsible for stability of all slopes and bracing and underpinning and for preparation of all design and shop drawings and their approval by the Building Department. Commissioner will engage a Special Inspection Agency to perform the Special Inspections described in Sections BC 1704.9.1, BC 1704.19, and BC 3304.4.1 of the 2008 NYC Building Code for such work.
6. No earthwork within the property line shall commence unless Contractor or permit holder notifies the Department of Building via phone or electronically within 24 to 48 hours prior to the commencement of such work. The Contractor shall preserve and protect from damage any adjoining structures.
7. Obtain approval and permit from the NYC Department of Building prior to commencement of any such excavation activity, as building is within 200 feet from a TA structure.

3.03 EXCAVATION

- A. Excavate earth as required for the Work.
- B. Install and maintain all erosion and sedimentation controls during all earthwork operations as specified on the Contract Drawings or as directed by local officials. If the erosion and sedimentation controls specified by the local officials are more stringent than those specified on the Contract Drawings contact the Commissioner.
- C. Maintain sides and slopes of excavations in a safe condition until completion of backfilling. Comply with

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Code of Federal Regulations Title 29 - Labor, Part 1926 (OSHA).

- D. Stockpile excavated materials classified as suitable material where directed, until required for fill. Place, grade, and shape stockpiles for proper drainage as approved by the Commissioner.
- E. Excavation for Structures: Conform to elevations, lines, and limits indicated. Excavate to a vertical tolerance of plus or minus 1 inch. Extend excavation a sufficient lateral distance to provide clearance to execute the Work.
- F. Concrete Slabs, Floors and Bases: Excavate to the following depths below bottom of concrete for addition of select granular material:
 - 1. Interior Floors: 6 inches unless otherwise indicated.
 - 2. Exterior Slabs and Steps: 12 inches unless otherwise indicated.
- G. Unauthorized Excavations: Unless otherwise directed, backfill unauthorized excavation under footings, foundation bases, and retaining walls with compacted select granular material without altering the required footing elevation. Elsewhere, backfill and compact unauthorized excavation as specified for authorized excavation of the same classification, unless otherwise directed by the Commissioner.
 - 1. Unauthorized excavations under structural Work such as footings, foundation bases, and retaining walls shall be reported immediately to the Commissioner before any concrete or backfilling Work commences.
- H. Notify the Commissioner upon completion of excavation operations. Do not proceed with the Work until the excavation is inspected and approved. Inspection of the excavation by the Commissioner will be made on 3 working days notice.

3.04 DEWATERING

- A. Prevent surface and subsurface water from flowing into excavations and trenches and from flooding the site and surrounding area.
- B. Do not allow water to accumulate in excavations. Remove water from all excavations immediately to

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prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to the stability of subgrades and foundations. Furnish and maintain pumps, sumps, suction and discharge piping systems, and other system components necessary to convey the water away from the Site.

- C. Convey water removed from excavations, and rain water, to collecting or run-off area. Cut and maintain temporary drainage ditches and provide other necessary diversions outside excavation limits for each structure. Do not use trench excavations as temporary drainage ditches.
- D. Provide temporary controls to restrict the velocity of discharged water as necessary to prevent erosion and siltation of receiving areas.

3.05 PLACING FILL AND BACKFILL

- A. Surface Preparation of Fill Areas: Strip topsoil, remaining vegetation, and other deleterious materials prior to placement of fill. Remove all asphalt pavement in its entirety from areas requiring the placement of fill or break up old pavements to a maximum size of four inches. Prior to placement of fill, smooth out and compact areas where wheel rutting has occurred due to stripping or earthwork operations.
- B. Excavations: Backfill as promptly as practicable, but only after approval by the Commissioner. Do not backfill with excavated material unless it meets the requirements of this Section.
- C. Place backfill and fill materials in layers not more than 8 inches thick in loose depth unless otherwise specified. Before compaction, moisten or aerate each layer as necessary to facilitate compaction to the required density. Do not place backfill or fill material on surfaces that are muddy, frozen, or covered with ice.
 - 1. Place fill and backfill against foundation walls, and in confined areas (such as trenches) not easily accessible by larger compaction equipment, in maximum six inch thick (loose depth) layers.
- D. Prevent wedging action of backfill against structures by placing backfill uniformly around structure to approximately same elevation in each layer. Place backfill against walls of structures containing

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basements or crawl spaces only after the first floor structural members are in place.

- E. Under Interior Concrete Slabs:
 - 1. Up to Subgrade Surface Elevation: Place selected fill when fill or backfill is required.
 - 2. Subbase Material: Place six inches of select granular material over subgrade surface.

- F. Under Walks:
 - 1. Up to Subgrade Surface Elevation: Place selected fill when fill or backfill is required.
 - 2. Subbase Material: Place as indicated.

3.06 COMPACTION

- A. All materials with exception of open graded stone:
 - 1. Compact each layer of fill and backfill for the following area classifications to the percentage of maximum density specified below and at a moisture content suitable to obtain the required densities, but at not less than three percent drier or more than two percent wetter than the optimum content as determined by ASTM D 698 (Standard Proctor) or 1557 (Modified Proctor).
 - a. Structures (entire area within ten feet outside perimeter): 95 percent.
 - b. Concrete Slabs: 95 percent.
 - c. Walks: 95 percent.

3.07 GRADING

- A. Finish Grading: Finish surfaces free from irregular surface changes, and as follows:
 - 1. Walks: Place and compact subbase material as specified. Shape surface of areas to required line, grade and cross section, with the finish surface not more than 1/2 inch above or below the required subbase elevation.
 - 2. Building Slabs: Grade subbase material smooth and even, free of voids, compacted as specified to within 1/4 inch above or below required subbase elevation.

3.08 RESTORATION

- A. Restore walks, curbs, and other exterior surfaces damaged during performance of the Work to match the appearance and performance of existing corresponding surfaces as closely as practicable.

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3.09 DISPOSAL OF EXCESS AND UNSUITABLE MATERIALS

- A. Remove from State property and dispose of excess and unsuitable materials, including materials resulting from clearing and grubbing and removal of existing improvements.
- B. Transport excess and unsuitable materials, including materials resulting from clearing and grubbing and removal of existing improvements, to spoil areas on State property designated by the Commissioner, and dispose of such materials as directed.

3.10 FIELD QUALITY CONTROL

- A. Compaction Testing: Notify the Commissioner at least 3 working days in advance of all phases of filling and backfilling operations. Compaction testing will be performed by the Commissioner to ascertain the compacted density of the fill and backfill materials. Compaction testing will be performed on certain layers of the fill and backfill as determined by the Commissioner. If a compacted layer fails to meet the specified percentage of maximum density, the layer shall be re-compacted and will be retested. No additional material may be placed over a compacted layer until the specified density is achieved.

3.11 PROTECTION

- A. Protect graded areas from traffic and erosion, and keep them free of trash and debris.

END OF SECTION

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SECTION 312343
EPS GEOFOAM

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes expanded polystyrene (EPS) Geofoam.

1.02 REFERENCES

- A. ASTM D6817 - Standard Specification for Rigid, Cellular Polystyrene Geofoam.

1.03 SUBMITTALS

- A. Submit EPS Geofoam manufacturer's product literature and TechData, including:
1. Physical properties in compliance with ASTM D6817 Type specified.
 2. 10-year physical property warranty.
- B. Shop drawings showing EPS Geofoam block layout.
- C. Quality Assurance: Submit the following:
1. Test Compliance: Summary of test compliance with specified performance characteristics and physical properties.
 2. Certificates: Manufacturer shall supply a product certificate showing evidence of Third Party Quality Control.

1.04 DELIVERY, STORAGE & HANDLING

- A. Deliver EPS Geofoam labeled with material Type.
- B. Store above ground, and protected from moisture and sunlight prior to installation.
- C. Product should not be exposed to open flame or other ignition sources.

1.05 MANUFACTURER WARRANTY

- A. Provide EPS Geofoam 10-year warranty covering the long-term physical property of expanded polystyrene

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Geofoam.

PART 2 PRODUCTS

2.01 MANUFACTURERS/SUPPLIERS

- A. Thermal Foams, Inc., 2101 Kenmore Avenue, Buffalo, NY 14207
- B. Thermal Foams/Syracuse, Inc., 6173 South Bay Road, Cicero, NY 13039
- C. AFM Corporation, 17645 Juniper Path, Suite 260, Lakeville, MN 55044

2.02 EPS GEOFOAM

- A. Foam-Control EPS Geofoam in compliance with ASTM D6817.
 - 1. Foam-Control EPS Geofoam: ASTM D6817 Type EPS39.
- B. All Foam-Control EPS Geofoam blocks shall be treated by the manufacturer with a tested and proven termite treatment for below grade applications, 3 year minimum field exposure. The treatment shall be EPA registered, meet requirements of ICC ES AC239, and be recognized in an ICC ES report.

2.03 GEOGRIPPER PLATES

GeoGripper® plates shall be used to restrain EPS Geofoam from moving laterally in layer over layer applications. The GeoGripper plate shall be manufactured by AFM Corporation or approved equal. The plate shall be made of galvanized or stainless steel with two-sided multi-barbed design capable of piercing geofoam. Each plate shall be capable of a lateral holding strength of 60 lbs. Provide two plates for each 4' x 8' section of EPS block as a minimum to minimize block to block movement during installation.

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's EPS Geofoam

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product data; including technical bulletins.

3.02 PREPARATION AND INSTALLATION

- A. Site Verification of Conditions: Verify conditions of substrate, grade and other conditions which affect installation of geof foam.
- B. Installation: Install geof foam under new concrete stairs as shown on the drawings

3.03 PROTECTION

- A. Protection: Protect installed product and finish surfaces from damage during construction as required.

END OF SECTION

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**THE CITY OF NEW YORK
DEPARTMENT OF DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS**

30-30 THOMSON AVENUE LONG ISLAND CITY, NEW YORK 11101-3045
TELEPHONE (718) 391-1000 WEBSITE www.nyc.gov/buildnyc

Contract for Furnishing all Labor and Material Necessary and Required for:

CONTRACT NO. 1 GENERAL CONSTRUCTION

**Harlem School of the Arts, Phase II
Building Renovations**

**LOCATION: 645 St. Nicholas Avenue
BOROUGH: Manhattan 10031
CITY OF NEW YORK**

Contractor _____

Dated _____, 20____

Entered in the Comptroller's Office

First Assistant Bookkeeper _____

Dated _____, 20____

